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Railway Age Gazette

SECOND HALF OF 1917—No. 22 SIXTY-SECOND YEAR

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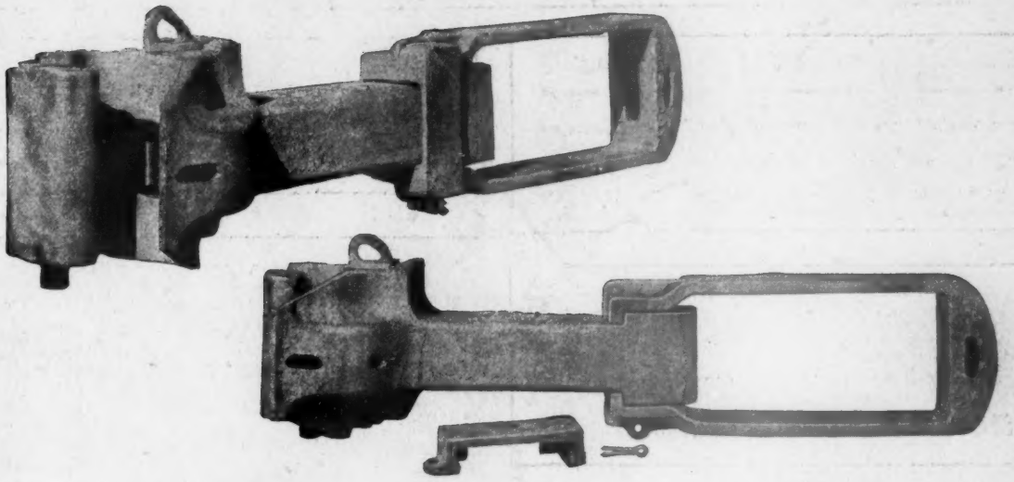

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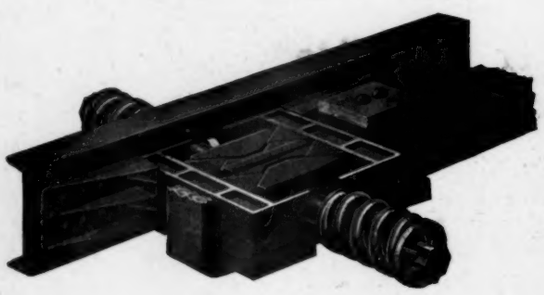

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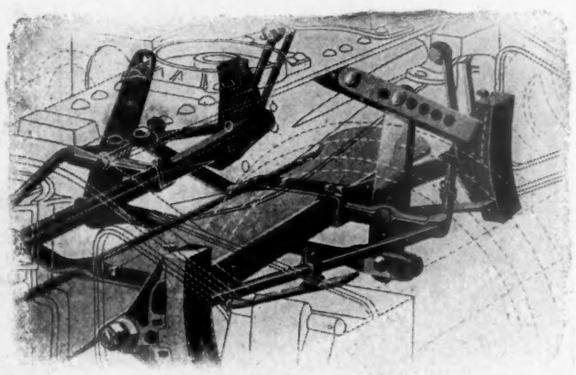

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Railway Age Gazette

Volume 63 November 30, 1917 No. 22

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Progress in Railroad Discipline

To operating officers, the prize paper on discipline without suspension, printed in this issue, should offer a number of hints concerning the best way to perfect the discipline of a hundred or a thousand train- and station-men. It cannot be that there is much need of further argument on the bald primary question of suspensions versus the Brown system, for those officers who still continue the old practices are practically unanimous, so far as we have been able to discover, in speaking only words of praise for the new system and apology or explanation for the retention of the old. Therefore, it is proper in this place to concentrate attention on the task of perfecting what has already been well begun. And we address operating officers collectively, excepting none, because of the universal testimony to the imperfection of the present rules, regulations and practices everywhere. The difficulty of maintaining the ideals so clearly outlined by Messrs. Heath and Keeler is constantly recognized on the best managed roads. It might sound pleasanter to use a softer word than "imperfection"; but why dissemble? Everybody knows the never-ending perplexities of keeping a large force of trainmen keyed up to a high level of energy and vigilance. The road to perfection is a long one; but the goal is clearly recognized, nevertheless. There is no greater satisfaction in a superintendent's or a trainmaster's workday life than that to be found in a force of men whose intelligence, training, and character are so well settled that the officer's confidence in them can be based on knowledge as well as faith; and where the employees' capabilities and their confidence in their employer are settled on such a sound basis that their loyalty can be seen to be growing constantly firmer.

Discrimination in Mileage Tickets

George W. Anderson, of Massachusetts, one of the new members of the Interstate Commerce Commission, held a hearing at Boston last week to consider general traffic conditions on the New England railroads; and in discussing passenger fares he said, according to the reports, that he "never could understand why there should be discrimination between a person who could afford to pay $25 for a mileage book and one who could buy only a single ticket"; he thought that it might be a good thing to "do away with mileage books and charge a flat rate to everyone." The reporters might have added that no one else ever could understand that point, either, without bolstering up his reasoning by arguments both illegitimate and unscientific. To say that the "wholesale principle" warrants a discount to the buyer of $25 worth of rides makes a big point out of a very little one. Mileage tickets have been justified on the ground that they accommodate the commercial traveler; but the only material ground for giving him a lower rate is to secure his freight shipments; and freight discounts or commissions ought to be charged to freight accounts, not passenger accounts. It used to be said that mileage tickets were very convenient for use by dishonest conductors and dishonest drummers in combining to cheat the road; and it is still said that they are traded in by storekeepers who sell parts of tickets, at a small advance, to persons who wish to save a few cents in that way. However, the popularity of the mileage ticket rests, not on arguments about economy or honesty but on the views of thousands of people who feel that they have saved a great deal of money by using them; and it may be that Mr. Anderson's frankness is due mainly to his newness. The public and the railroads will await with interest the views of the other eight commissioners on this question of justice to the poor.

Highways Helpful to Railways

The Railroads' War Board, in bulletin 42, suggested that in order to increase the efficiency of the railroads they "encourage the use of motor trucks and co-operation with the trolley lines for handling short haul freight." To make use of motor trucks, it is, of course, necessary to operate them over properly constructed highways and to keep up the maintenance of these highways. Priority order No. 2, issued by the Priorities Committee of the War Industries Board of the Council of National Defense on October 27, denies the use of open top cars for the transportation of materials and supplies "for the construction, maintenance or repair of public or private highways, roadways, streets or sidewalks." This order, if it is not modified during the winter, will, of course, stop work on all highways so far as it depends on the haulage of material in open top cars. Meanwhile a Highway Transport Committee has been appointed by the Council of National Defense, as noted in the *Railway Age Gazette* of

November 16, 1917, to study the possibilities of motor truck transportation; it is quite probable that this committee will investigate the possibility of relieving the railroads by motor truck haulage at congested terminals. It is exceedingly important that railway officers co-operate with state highway commissioners and public authorities to determine just what roads will be of the greatest value from this standpoint so that all of the available money and material may be expended on the strategic points. These must be determined upon in the very near future in order that the plans may be made and the material provided so that work may be started at the opening of the season. If the strategic value of these stretches of roadway is placed before the Highway Transport Committee and is clearly understood, the Priorities Committee will doubtless co-operate in seeing that arrangements are made for transporting the necessary materials.

THE VALUATION DEPARTMENT AND EXEMPTIONS

IN proportion to the number of its employees, probably no branch of railway service has furnished as many men for the various classes of government work in this war as the engineering department. Not only has it contributed its full quota by conscription but it furnished three of the nine regiments of railway men sent to France in addition to representation in the five operating regiments. Many engineers have been called to assist in the building of the cantonments and other construction activities of the government while others have enlisted in the engineering corps of the army for foreign service. As a result the engineering forces are seriously depleted on many roads, even to the point of seriously delaying the progress of improvements.

One branch of the engineering department which is particularly hard pressed is that engaged in valuation. Here the forces have been recruited almost entirely in the last three or four years, and are composed to a large extent of young, unmarried men. As a result the number leaving for military service has been unusually large. At the same time the federal division of valuation has been urging the roads to make greater progress in the completion of maps and the collection of data. In spite of this pressure the roads have generally followed the policy here as elsewhere in the engineering department of refusing to claim exemption for their men, believing that the war-time needs of the government were at least equal to their own. Because of the position taken by the roads in this respect there has been much criticism of the government valuation forces because of rumors that exemption is being claimed generally for the men in at least one district in an effort to avoid the depletion of forces suffered by the roads. It is encouraging to learn from official sources that this reported attitude of at least the one district does not reflect the position of the Division of Valuation. We are advised that the division has encouraged the enlistment of its men in military service, and particularly the entry of its engineers into the Engineers Reserve Corps, and that many employees of the Division of Valuation have enlisted in that branch of the service. Likewise leave without pay has been granted employees desiring to attend the training camps, the law preventing the continuance of the salary of government employees whose names go on the pay roll in another branch of the service. Likewise we are advised that the officers in the valuation department have been instructed not to send in claims for exemption for approval to headquarters unless in their opinion it would be practically impossible to fill the men's places at the present time. Acting under these instructions 52 applications for exemption have been received, only 31 of which have been approved by the commission. The total number of men in the employ of the Division of Valuation is about 1,575.

The fact that the Division of Valuation is taking this broad view with reference to exemption in spite of the plea of certain men in the division that universal exemption should be claimed is to be commended. At the same time the fact that claims for exemptions are being urged by anyone indicates the drain on the railway engineering talent of the country which the valuation work is creating. This gives added weight to the suggestion that the work be discontinued at this time in order to further the solution of the one big problem of this country at the present time—winning the war. We believe this to be particularly desirable because of the recent statement by the director that he has been forced to reach the conclusion that the present law does not require the determination of final values of the properties of the railroads, and that this will not be done at the present time, so that the work when completed will be far from conclusive.

THE COAL SITUATION—A NATIONAL MENACE

THE coal situation is becoming a menace to the prosperity of the country and to the success of its miliary preparations. The total production of bituminous coal in the United States in 1916 was 502,520,000 tons, and the total production of Pennsylvania anthracite was 87,578,500 tons, making a grand total of 590,100,000 tons. This was the largest output ever known, being an increase over that for 1915 of about 58,400,000 tons. It was estimated after the United States entered the war that in order to meet the industrial and military needs of this country the production in 1917 should show an increase over that of 1916 of 100,000,000 tons, or about 17 per cent.

The increased production which it was estimated would be needed is not being attained. At the end of October the production of bituminous coal was less than 10 per cent ahead of that in the corresponding year of 1916.

In consequence of the failure to produce the required amount of coal, there is a general shortage of it for domestic, for industrial and for other purposes. The concerns engaged in the manufacture of munitions complain that maximum output by them is prevented by inability to get sufficient coal. The railroads are in danger of not being able to get enough. The householders in communities all over the country are being rationed by their dealers and live in constant dread lest they will be unable to keep themselves warm this winter.

Why does this condition exist? It exists mainly because the coal producers of the United States have displayed sordid selfishness, a want of business capacity and a lack of patriotism. The railways, foreseeing the course of developments, organized themselves to meet the country's transportation needs during the war within five days after war was declared. The coal producers have not yet properly organized themselves to meet the country's needs for fuel. The railways, in spite of the seriousness of their labor situation, have succeeded in keeping their employees sufficiently satisfied to avoid interruption of their operations, except in a few sporadic cases. The coal producers have shown such want of diplomacy and capacity in dealing with their labor that month after month the reports of the United States Geological Survey have shown that mines all over the country have been working to much less than their capacity because of labor troubles. The railways have been obliged to go on rendering their service for the same rates as before the war, although they have had greater increases in expenses of operation than the coal producers; and yet during the five months ending with August they handled 16 per cent more freight than in the same months of last year, and in the

months from May to October, inclusive, they transported 18 per cent more coal than in the same months of last year. They have moved this year's increased output of coal, and also the vast quantities of it which in former years would have moved by water. The coal producers, on the other hand, succeeded in getting the government to fix prices for coal vastly higher than any ever known before the conditions created by the present war; but in spite of these high prices they have exerted themselves sufficiently to increase their production by only about 10 per cent.

While these facts are obvious, the government Fuel Administration at Washington does not seem to to have discovered them. Instead of adopting measures to secure greater production of coal, it is largely engaged in paying compliments to the producers for having secured the relatively small increase of production they have obtained and in joining with them in "passing the buck" to other agencies. The coal producers are practical men. The Fuel Administration seems to be composed chiefly of theorists. To all appearances, the practical men are manipulating the theorists to suit their own purposes. It looks as if the Fuel Administration which was created largely to control and promote the production of coal, has fallen under the control of those it was created to regulate.

Having failed through avarice, incapacity and want of patriotism to meet the requirements of the situation, the coal producers are engaged in the familiar practice of crying "stop thief." The National Coal Association, an organization formed apparently to increase the output of misinformation regarding the fuel situation rather than the output of coal, is issuing frequent statements intended to put the responsibility for the failure to secure adequate production of coal upon the railroads. On October 8 the National Coal Association announced that "bituminous coal production in the United States was reduced approximately 2,000,000 tons last week by car shortage and railroad congestion." Again, on November 23, the coal operators issued a statement saying, "It has been impossible for the railroads expeditiously to handle even the most vital necessities of the country, including fuel."

But the coal producers give reports to the United States Geological Survey as well as to the general public regarding their activities. Doubtless under present conditions they do not make their reports to the Geological Survey any less favorable to themselves than is entirely justifiable. Nevertheless, their reports to the Geological Survey, taken at their face value, indicate a very different situation from the statements being given out for public consumption by the National Coal Association.

In a letter published in the Washington Post on November 22 Fairfax Harrison, chairman of the Railroads' War Board, called attention to the actual situation as disclosed by the weekly reports of the Geological Survey. He said:

> "The statistics indicate that 'full time output' of the bituminous mines would be at the rate of approximately 14,300,000 tons a week. . . . During the seven weeks ended with November 3 production amounted to 10,600,000 tons per week, or about 4,000,000 tons a week less than 'full time output.' We find that the part of the weekly deficiency as compared with 'full time output,' which was attributed by the Geological Survey to 'car shortage,' was 1,717,000 tons, but this accounts for only 45 per cent of the failure to secure 'full time output.' It leaves 2,209,000 tons, or 55 per cent, of the weekly deficiency to be accounted for on other grounds. After allowing for all the shortage of production attributed by the Geological Survey to the railways, there still remains a much larger additional shortage of 2,209,000 tons a week, or 13,500,000 tons in seven weeks, which it was entirely within the power of the National Coal Association to produce and deliver to the public."

During the eight months since the United States entered the war, the railways have not only handled a vastly larger coal traffic, but a vastly larger traffic of every kind than they ever did before; and yet during at least three-fourths of this period reports of the Geological Survey have shown that most of the failure of the mines to secure their theoretical "full time output" has been due to causes other than "car shortage." The Geological Survey classifies the causes of failure to secure "full time output" under the headings, "Car Shortage," "Labor Shortage and Strikes," "Mine Disability," "No Market," "All Other Causes," and "No Cause Given." The combination of causes resulting from conditions under the control of the coal producers themselves during 12 weeks out of the 18 ending with November 3, had more effect in limiting the total output of the mines than did car shortage.

It goes without saying that the prime requisite to the maximum transportation of coal is the loading of cars as fast as they are set at the mines. When the mines are prepared to produce to full capacity, but the railways do not furnish enough cars, the limitation of output is due to car shortage. When the railways furnish enough cars, but the mines are unable to load them all, the limitation of output is due to shortcomings in the operation of the mines. Since the reports of the Geological Survey show that shortcomings in the operation of the mines have had much more effect in preventing full time output than car shortage and railroad congestion, it seems to be about time that the coal producers should begin to do their part in securing full time output instead of inspiring attacks upon the railways for their relatively small failure to do their part.

There is a tradition that the streets of ancient Jerusalem were kept clean by every man sweeping in front of his own door. Consideration of the advantages of this practice is commended to the producers of coal. The *Railway Age Gazette* does not believe in government operation of industries. If, however, there is any industry in America which, since this country entered the war, has justified serious consideration of government seizure and operation of it, that industry is the coal industry. If the coal producers persist in following the course that they have thus far been following, they will be the first of the large industries to provoke the natural public resentment which will land them in the hands of the government.

THE POOL OF THE EASTERN LINES

THE *Railway Age Gazette* in an editorial in its issue for November 23 entitled, "The Railway War Problem and Its Solution," emphasized the point that the main thing needed to enable the railways to handle more traffic was to pool their facilities. We also indicated that before this could be done, the anti-pooling section of the interstate commerce act and other federal laws restricting the freedom of action of the managers of the railways must be repealed.

We were right as to the former point. The Railroads' War Board, by action taken last Saturday, has supported the contention as to the need for complete pooling. We were wrong as to the necessity for legislation. The War Board created a pool of the railroads east of Chicago without waiting for the slow processes of legislation to authorize it.

The statement issued by the Railroads' War Board outlining the measures adopted referred to them as "revolutionary." This was no exaggeration. Under the plan adopted the operating vice-presidents of the eastern lines are authorized and instructed to work all of the facilities of the railways in the territory east of Chicago as if they were all owned by a single company. If a single company owned them and if it were well operated, it would move every passenger and ton of freight over that line which at any given time was in the best shape to handle it; and this is what the War Board has directed the committee of operating vice-presidents to do, and what it has begun to do. Just how extensive will be the changes in routing and in the methods of handling passengers and freight required to accomplish the desired result, only experience can show, but

whatever methods are necessary will be adopted, regardless of the interests of the individual railway companies.

The situation on the eastern lines is the key to the entire transportation situation of the country. On them is being concentrated a vast traffic originating throughout the United States. In consequence, there has developed on them a congestion which is largely responsible for the shortages of cars being reported from other sections. The pool of facilities which has been created in the east is, therefore, adapted not merely to relieve the situation in that section, but also to improve it throughout the country. One important part of the plan is the transfer of as many men, locomotives and machine tools as practicable from the western and southern lines to the eastern lines and the use of the repair shops of the western and southern lines to some extent in maintaining the equipment of the eastern lines.

The creation of this pool of the eastern lines is the most important step which has been taken by the Railroads' War Board in carrying out the resolution adopted by the railway presidents in Washington on April 11 to operate all the railways of the country as a single continental system. The first important step taken in carrying out that resolution was the creation of the box car pool. The next was the adoption of measures, which have proved highly successful, for securing a greater utilization of locomotives and cars. The next was the pooling of all military freight and passenger transportation. This last mentioned is a measure concerning which not much has been said, but which has been of great importance. In co-operation with the government military authorities, the Railroads' War Board and its subsidiary committees have regularly routed military freight and passenger business over the lines of least resistance. It has been chiefly due to this that there have been practically no congestions or delays in the transportation of materials for the construction of the cantonments or in the movement of troops, or of supplies for the troops. In addition, the transportation of supplies for this country's European allies has been practically pooled.

In spite, however, of all these measures and especially of the great increases which have been secured in the amount of traffic moved by every locomotive, every car and every train, a very serious congestion developed on the railways in the eastern territory and especially upon certain lines in that territory. The main cause of the congestion has been the enormous increase of business, but another important cause has been the failure of the government to adopt adequate measures for controlling the movement of materials being used in its military preparations. Judge Lovett, the government priority director, has not issued enough priority orders to cause any trouble, but the different government departments have had preference given to such a large volume of shipments that last week it was reported that on certain of the main eastern trunk lines two-thirds of all the freight being handled was moving under preference requirements. The railways have asked the representatives of the government to help relieve the situation by such means as the diversion of traffic from the North Atlantic to the South Atlantic ports, by the reduction of preference orders and by the reduction of the cross-hauling of coal.

The pool of the eastern lines which has been created is primarily a pool of physical facilities. The duty of the government in the premises is not doubtful. Its officials were cognizant before the railways took this important step that they were going to take it and the reasons for it. Therefore at the earliest practicable time the government should adopt all measures necessary to enable the roads to do with unquestioned legality all the things they are now doing or that they ought to do in future to promote the public welfare, and at the same time to prevent any of them from suffering serious losses as a result of the patriotic course they are following.

NEW BOOKS

Igenieria de Ferrocarriles. By Verne Leroy Havens. First Edition, 357 pages, 4½ in. by 7 in. Illustrated. Bound in leatherette. Published by John Wiley & Sons, New York. Price $3.50.

This book is written in the Spanish language and is intended for the use of the railroad builder of Central and South America and his assistants. The sub-title, "The Theory and Practice of Railways from the Conception of the Idea to the Completion of the Project," expresses the purpose of the book, namely, to condense within the space of 356 pages, the fundamental principles of economic railway location, the methods of making railroad surveys, the management of field parties, and the principles of railway surveying. The last 100 pages are devoted to the usual tables found in a field book on railroad engineering, using the metric system. The book contains chapters on Commercial Considerations, Railway Estimates, Reconnaissance, Field Party Organization and Equipment, Preliminary Surveys, Topography, Railway Economics, Railway Surveying and the Adjustment and Care of Surveying Instruments.

Shape Book. 352 pages. 5 in. by 8 in. Bound in Flexible leather. Published by the Carnegie Steel Company, Pittsburg, Pa. Price $1.

This is the sixth edition of the Carnegie Shape Book and, with few unimportant exceptions, contains profiles of all of the sections rolled in the structural plate, bar and rail mills of the Carnegie Steel Company. Compared with the fifth edition issued only two years ago, there are 265 pages in the new volume in place of 227 pages in the earlier one devoted exclusively to the profiles of sections. This increase in the number of sections has been made necessary by the remarkable expansion in ship building and the extensive use of steel frames for windows, doors and skylights in industrial building construction. In addition to sections for these purposes and the usual structural steel sections, dimensions are given for the standard A. S. C. E., and A. R.A. rails and a considerable number of special rail sections, as well as the sections of angle bars and other forms of rail joints. Four pages are devoted to sections of steel ties. The last 85 pages comprise tables of weights and areas and an index to the section numbers.

Wood and Other Organic Structural Materials. By Charles Henry Snow, dean of the School of Applied Sciences, New York University. 478 pages, illustrated, 6 in. by 9 in. Bound in cloth. Published by McGraw-Hill Book Co., 239 West 39th St., New York. Price, $5.

Wood, unless treated alone, is usually associated in texts with the other common structural materials, steel, iron and masonry. In this book it is associated with certain other organic materials used in structures, namely, oils, paints, varnishes, glues and India rubber. The subject of wood covers 376 out of the 478 pages and the treatment may be said to comprise a general account of its physical properties. Strength, elasticity and other characteristics of special importance in the structural use of wood receive only minor treatment, a policy which the author justifies in the preface. The first 44 pages are given to an exposition of the physical makeup of wood. Following this, nearly 200 pages are devoted to a cataloging of the various species and their characteristics. Thirty-three pages cover the common structural properties, and following these is a chapter on decay. Fire hazards with respect to the use of wood in structures are also covered at some length. Marine wood borers and other wood destroying insects are given a much more full and complete treatment than is usually found in most books on wood. Fifty pages are devoted to the protection of wood against decay and animal life by the well known methods. The last 100 pages of the book cover the physical properties and uses of the other organic materials mentioned above. The treatment is interesting and combines in one volume much information that is not often found outside of the more extended encyclopedias.

Letters to the Editor

ARE LOCOMOTIVES SLACKING?

New York

To the Editor of the Railway Age Gazette:

Why should all the recent remarkable improvement of railroad operation be secured by heavier car loading? In opening the rate case for the railroads George S. Patterson, railroad counsel, is quoted in the November 9 issue of the *Railway Age Gazette* as making this significant statement:

"The Eastern lines are achieving remarkable efficiency records with a plant several years behind the growth of the country. Eight billions more ton-miles were produced in the first four months of the war than in the same period last year. This gain of 15 per cent in service rendered the nation, with only 1½ per cent in equipment, was *almost entirely the result of the heavier trainloading.*"

Is the present locomotive equipment already hauling up to the limit of its weight? Certainly a study of some of the annual reports would indicate otherwise.

The Southern Railway and the Illinois Central have approximately the same class of traffic. The Southern owns 1,660 locomotives against 1,437 for Illinois Central. But while the Illinois Central increased the number of freight ton-miles 17 per cent with only 3.3 per cent increase in freight locomotive miles, the Southern increased its revenue ton-miles 14.6 per cent and took 12 per cent more freight locomotive miles to do it. Why this difference? Heavier engine loading is the answer. What has been done by one road can be duplicated by others. The pressure for more transportation is coming stronger and stronger. It is only a matter of time till all managements will be awake to the opportunity for increased efficiency that lies in heavier engine loading. It is reported that the Southern is increasing the hauling capacity of its existing locomotives by modernizing them at a rapid rate. When this work is complete and if the re-rating is made on new basis of a heavier loaded and therefore easier hauling train, the Southern will undoubtedly show a fine increase in ton-miles per freight locomotive miles.

A. N. Operator.

REDUCING THE NUMBER OF TELEGRAMS

Raton, N. M.

To the the Editor of the Railway Age Gazette:

The article appearing in your issue of September 7, entitled "Swat the Letter Campaign," leads the writer to observe that the paring down of some telegrams and the entire elimination of others would make an appreciable saving.

How many of us, when dictating or writing a telegram, make a mental calculation of what the telegram would cost the company if sent at commercial rates and what would be saved out of our own pocket in case we were to pay for it by cutting out an extra word or two?

Such phrases as "Please advise" or "Advise quick," have no place in a telegram. The mere fact that we are sending a telegram should indicate to the recipient that prompt action is required. We get into a habit of sending the conductor and engineer a certain form of message, when through some fault or other the train is not making the time expected, or the engine has a mechanical failure. In these progressive days of telephones, better and more concise information can usually be had by talking to either on the telephone. The engineer should make a report or send a message stating the engine's disability and not have to be asked for it by wire.

Almost every railroad in the country has passenger train service that leaves general and division offices after the closing hour, and passes stations during the night, which could carry messages enclosed in a certain colored envelope requiring preferred attention over ordinary mail. Yet every day we see messages originating from general and division offices that could be efficiently handled by mail. Some roads have adopted this "Train-gram" system, but there is still big room for improvement in reducing the number of telegrams handled and eliminating unnecessary words.

In order to bring about a reduction in the number of telegrams handled, the manager of the telegraph office, for instance, should make a copy of a few messages that appear unnecessary or contain unnecessary words, and send copies to superintendent of telegraph, or to the division superintendent, to be handled with party at fault. I do not mean to imply that the manager of the telegraph office should be dictator or censor of telegrams passing through his office, but once it is generally known that useless and lengthy telegrams were being watched, a big reduction will be noticed.

T. C. Looney.

WHAT IS A FULL CREW?

Elizabeth, N. J.

To the Editor of the Railway Age Gazette:

Judging by the report printed in your paper, November 16, the hearings held by the State Railroad Commissioners on the Central of New Jersey "full crew" application did not bring out much of anything that would really enlighten anybody on what the law requires or what it ought to require; or whether it is of any use at all. If you have quoted all that was in the report concerning the "protection of passengers and employees," which is said to be the object and purpose of the law, it must be a pretty poor report; for the question of safety *was not* wholly ignored. At several points the witnesses were questioned as to whether a certain piece of work could be done any more safely by three brakemen than by two, and in every instance, I believe, the answer was that there was no difference. One witness summed up by saying that the sixth man (the third brakeman) was as necessary on a freight train as a spare tire on an automobile; but nobody seems to have cared to inquire how the fifth tire makes an automobile run any more safely or in what way it "protects" the occupants of the car or of any other car on the street, except as it protects them from the annoyance of a long delay in case a tire has to be renewed while on the road.

If you had been in the lobby outside of the hearing room on one of the days of the investigation you might have heard some facts concerning this question of freight train operation, more enlightening than those brought out by the commissioners. It is not an unheard of thing for more light to be shed on knotty questions in the lobbies than in the court room, and your readers will be interested in the following scraps of a dialogue between a yardmaster, who may be called Frank Elston, and a venerable looking lounger, who may have been a yardmaster (or a reporter or a clergyman) forty years ago, but whose only present occupation seems to be to sit around looking like Judge Chambers. I cannot tell you his name, but we may call him I. Newton. Approaching the yardmaster, whom he seemed to know, he said:

"Rather dreary chin music in there" [in the hearing room].

Elston: "I believe you! Lawyers never seem to get anywhere until they get up to make their own speeches. As to the witnesses 'most every lawyer seems either to think they are too tender to be abroad except when packed in cotton, or else they are enemies who ought to be put in jail for their stupidity or their dishonesty. Why don't they get somebody on the witness stand who can tell that bunch [the commissioners] what's what?"

Newton: "That ain't the way they do things in courts!

But is there really anything in this claim of the trainmen that they have such a hard job getting over the road with these heavy trains?"

Elston: "Yes; there is something in it; but what makes me mad is their darned laziness. Those difficulties which their lawyer makes so much of are real enough, but what do they amount to? When a drawbar pulls out in the middle of a fifty-car train there is no fun in dragging a heavy chain from the caboose, especially if it is a dark night and you stumble over a tie and fall and scratch your hands; but what has that to do with protecting the passengers and employees which the commissioners say is the purpose of this law? Everybody knows that a fifty-car train of today is a slow coach compared with railroading years ago, but what if it is? Does the fact that a train loses an hour on the road because of a delay which could have been reduced to half an hour if another man had been there warrant the legislature in increasing our expenses for brakemen? I am constantly watched by my boss to see if I am wasting the company's money in any detail of my work; and here these lazy brakemen are doing their best to waste the company's money by putting on a man who does about five minutes' work on a trip—five minutes of necessary work, I mean."

Newton: "But how about those terrible long trains when they have to stop in a cut, on a curve, where it is impossible to see from one end of the train to the other? They claim it is dangerous handling trains in such conditions."

Elston: "Shucks! The 'danger' is all in the lawyer's eye. The brakemen know better. They wouldn't try to stuff that down the throat of a commissioner who knew anything about railroading. If you can't give a signal because of a curve you've got to run forward a few cars; that's all. It may delay you as much as five minutes, but what has that got to do with the safety that they are always harping on? And, did you notice that fat fellow who was asked about where the 'full crew man' rode? Always in the caboose! If he is needed anywhere it is on the middle of the train, where he can watch for hot boxes and where he can pass the hand signals when they stop in that Phillipsburg cut; but the twentieth century brakeman is not putting himself to any such inconvenience as riding out on top when he knows that it is not necessary. The more men they have in a crew, the less attention they pay to the little things. They don't even inspect the running gear at tank stops as they pretend to do. Why, on the Pennsy a year or two ago, down below Trenton, they had a wreck, killing several men riding in a car with some race horses and costing the company $100,000, all due to a hot box which had been blazing for 10 miles, and not a man in the crew had seen it! *If* the extra man would ride on top; in the middle of the train; and if he would watch out as he ought to, he would, once in a while, discover a hot box, or a brake beam down, which would not be seen from the engine or from the hind end; but those occasions are so rare that they are not worth counting."

Newton: "I suppose that in taking and leaving cars at way stations, the additional man is a real help. They have to flag trains in all directions, don't they? I should suppose it would take a half dozen men instead of two."

Elston: "Not much! That is one of their principal fads, but there is not anything in it. Many times they can save perhaps five minutes by having the extra man, but that five minutes' saving costs somewhere from ten to a hundred dollars; for the stops of the through trains, in which this supposed saving is made, do not happen very often. There isn't any question of safety about it. As to flagging, the block signals protect them both ways. If there is any danger that some extra freight may come along and run into them, the thing to do is to jack up the engineers of those extras so that they will obey the block signals.

"This 'full crew' nonsense is tiresome. What is a full crew? Why, one consisting of enough men to do the work. On a long local passenger train they might need four or five men, to assist passengers. On a local freight train they can economize time—not increase safety—by having a half a dozen men. But on a long freight train, every movement of which is controlled by the engineer with his throttle and his brake valve, the crew of a conductor and *two* brakemen have nothing at all to do for about nine-tenths of the time. The committees, who simply want to make more jobs (they will ask the legislature for a second extra man as soon as they dare to) talk loudly about safety; but all the real purpose they have in their minds is the safety of their pockets; or, rather the fattening of their bank accounts. They get away with their fake arguments because the lawmakers are constantly tumbling over each other to curry favor with the brotherhood. These lawmakers don't ask themselves whether the trainmen's statements are sound; but only whether they will hold water long enough to get the governor to sign any old bill they choose to put before him. The trainmen put it over the superintendent not because he does not know better, but because he thinks it best not to start a fight with such an ugly bunch, who are mean enough, any time, to knock him when they go to the general manager—if it happens to suit their purpose to do so.

"I wish they would get some real safety into their legislative grinding machines. They keep on doing everything to please the union, but a bill to promote good railroading in a rational way usually dies from neglect. As to handling freight trains, the question of safety is one for the civil engineers and the accountants to deal with. In theory an *efficient* crew of six men can sometimes carry out some particular safeguard in a way to make the protection against accidents a hair's breadth more satisfactory than it could be done with a smaller crew; but they can't prove it in practice and any increase or decrease in safety that can be measured, even in your mind, is never discoverable."

Mr. Editor, I forbear to take more of your space; most of your readers know these things already, but I thought perhaps you were not repeating them often enough. How can we get some of these illuminating informal dialogues which may be heard in any state capitol when occasion arises—how can we get them into the printed proceedings? How can the talk of the lobbies be transferred to the halls of justice where the judge and the reporters can have the benefit of hearing them? N. M. JAMES.

NEW LIGHTING ARRANGEMENT IN SLEEPING CARS

CHICAGO, Ill.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

I have been interested by the letter signed "Traveler," and those which have followed it, regarding the objections to the upper berths in sleeping cars. I agree with the letter published in the issue of October 19, that the greatest objection to the upper berth is that of light.

It is encouraging to those who spend much time in sleeping cars to know that the Pullman Company is devising methods that will remove the disadvantages of the present lighting system. In my travels I have noticed a new lighting arrangement which has apparently been installed to provide illumination for the floor of the car after the ceiling lights have been extinguished. Some of the installations which have come to my notice have been open to the objection that the floor light was noticeable in the lower berth. In one of the new lighting systems the illumination of the floor has been accomplished by fixtures placed below the end of the seat and this arrangement, in my opinion, is entirely satisfactory. It provides all the light that is required yet would not be noticed by any one inside the berths. The time is probably not far distant when those who prefer the upper berths will not longer be annoyed by the glare of the cluster lights in the car ceiling after they have retired.

OBSERVER.

Eastern Railroads to Be Pooled

**To Be Operated Under Committee of Vice-Presidents—
Revolutionary Measures Adopted to Relieve Congestion**

THE Railroads' War Board on November 24 adopted the most revolutionary measures it has undertaken since its organization in order to relieve the congestion of traffic on the eastern railways. It directed "that all available facilities on all railroads east of Chicago be pooled to the extent necessary to furnish maximum freight movement." The effect of the plan adopted will be that to the full extent that conditions render it desirable these railways will be operated as a unit, entirely regardless of their ownership and individual interests. The operating vice-presidents of the eastern lines have been appointed a committee to operate as a unit all the lines involved and have been given instructions and authority to adopt all measures which in their judgment may be necessary to relieve the present situation and assure the maximum amount of transportation.

An important part of the plan adopted for the operation of the eastern lines is that of placing at their disposal the facilities of railways in other territories to such extent as may be necessary.

The special action taken with reference to the eastern lines is in recognition of the fact that the situation on those lines is more critical than in any other part of the country because upon them is being concentrated the bulk of the fuel and raw materials being used in the manufacture of munitions and also the vast quantities of supplies and food stuffs which are being transported to Europe. Therefore, locomotives, employees and machine tools will be transferred from other railways to the eastern lines, and the repair shops of other lines such as those of the western roads in Chicago, will be utilized for making repairs on the equipment of the eastern lines.

The measures adopted were the result of a series of conferences with government authorities and officers of the eastern lines which the Railroads' War Board initiated on Monday, November 19. The vice-presidents of the eastern railways were called to Washington on Thursday and received from the War Board their instructions for immediate action. On Saturday a meeting was held which was attended by Dr. H. A. Garfield, the government Fuel Administrator; E. N. Hurley, chairman of the United States Shipping Board; Robert S. Lovett, the government priority director, and Commissioner Edgar E. Clark, of the Interstate Commerce Commission, and the Railroads' War Board. At this conference the situation was fully discussed with the representatives of the government, who concurred in the importance of adopting the drastic measures decided upon as the result of the recommendations of the vice-presidents.

The measures the Railroads' War Board and the committee of operating vice-presidents will put into effect at once are as follows:

Measures to Be Put in Effect at Once

All available facilities on all railroads east of Chicago will be pooled to the extent necessary to furnish maximum freight movement.

All open top cars of all eastern roads and similar cars of private ownership which are at home on eastern lines will be pooled on an equitable plan, distribution under the pool to be made pro rata on the basis of the tonnage carrying capacity of the equipment in the pool. The car pool is to be administered under the direction of the Commission on Car Service.

The Commission on Car Service will divert from those lines where the congestion is most acute all freight that can be handled by any open route until the congestion is relieved.

The pooling of coal will be further extended wherever practicable.

The National Fuel Administration is asked to arrange for supplying the various coal markets from the nearest coal mines in order to avoid waste of car efficiency.

The committee reported that any order that preference be given to any class of cars or freight results in a slowing down of the operation of the transportation machine and that a constant flow of all traffic concurrently produces the best transportation results. The War Board, therefore, emphasizes the desirability of reducing the great volume of government preference orders which, by placing a substantial majority of the freight moved on the same plane, without attempt to classify as to urgency, defeats its own object.

The eastern railways are in serious need of more men and special measures may be necessary to provide them. Some specific illustrations of the way in which the trackage of the various lines is to be pooled are given in the report of the vice-presidents. For example, the Western Maryland will allow its line to be used as an eastbound track in connection with the Baltimore & Ohio from Connellsville, Pa. to Jerome, Md., 125 miles, thus making three tracks between those points. The Erie Railroad is to be used to its full capacity in transporting lake ore and coal between Cleveland and Youngstown, and power and equipment will be provided from other lines for its use as required. It is anticipated that under the new arrangement large amounts of freight traffic will be diverted from the railroads which are now most congested to those which still have some unused capacity.

The Railroads' War Board has been studying with concern the increasing congestion on the eastern lines. It has recognized the fact that the roads in that territory have been becoming overburdened in consequence of the growing industrial activity, of the condition of the labor market, and of other conditions. As part of the programme for relieving these conditions it has addressed a letter to the government Fuel Administration in which it has made the following recommendations:

Recommendations to Fuel Administration

That a survey be made by the Fuel Administration of present contracts and methods of purchase and shipment of coal so as to shorten the rail haul from mine to consumer and to eliminate as far as possible all cross hauls of coal.

"Pooling of coal within reasonable limits," the War Board said, "will without doubt produce additional large savings, and the railroads are prepared to co-operate in any measures pursued by the Fuel Administration to that end."

That immediate measures be adopted to transfer movement of foodstuffs and other export material to southern and gulf ports to as large a degree as compatible with public interest, in order to relieve the eastern congested territory of an equivalent amount of train service.

That immediate survey be made of all government requirements now involving the movement of raw materials in and manufactured product out of centers of industry, so that accumulations on cars and line and in terminals will not occur as now, while product is awaiting use here or ocean transportation for foreign use.

As the concentration in certain parts of eastern territory of vast government and industrial activities has overtaxed the capacity of rail lines in that territory, considering the heavy movement of coal and other heavy commodities, which

formerly moved on coastwise vessels, but has now been thrown upon the railroads, the heavy military and civilian passenger travel, etc., it is recommended that further enterprises involving large operations in the use of coal and other heavy commodities should not be established in that territory, except after full consideration of these conditions.

In a statement announcing the principal features of the plan, the War Board said: "The measures adopted are calculated to enable the eastern railways to transport the maximum amount of freight traffic which it would be physically possible, under any organization or by any methods, for them to move with their present facilities."

One of the effects of the congested condition of the eastern lines was explained by Fairfax Harrison, chairman of the Railroads' War Board, in the following statement regarding the car situation:

"Reports to the American Railway Association from all the railroads of the country show that on November first this year the excess of unfilled car orders amounted to 140,012 cars, an increase of 25,104 cars over the same day last year. Of this number, 97,000 cars are called for in other parts of the country than the congested region east of Chicago and north of the Potomac river where the abnormal war business is heaviest. Many of these orders for cars could be filled if the cars now delayed in the congested regions could be released. The Railroads' War Board is now applying extraordinary remedies in the endeavor to accomplish this."

The operating officers of the eastern lines met on Monday at the headquarters of the Railroads' War Board in Washington and created a committee which will be in full charge of the operation of the railway pool. A. W. Thompson, vice-president of the Baltimore & Ohio, was made chairman. The other members of the committee are C. R. Gray, president of the Western Maryland; A. T. Dice, president of the Philadelphia & Reading; P. E. Crowley, vice-president of the New York Central; Elisha Lee, acting vice-president of the Pennsylvania Lines East; G. L. Peck, vice-president of the Pennsylvania Lines West, and A. J. Stone, vice-president of the Erie.

The committee will establish headquarters in Pittsburgh at once and will sit continuously until the entire traffic problem produced by the abnormal war business in the district east of the Mississippi and north of the Potomac and Ohio rivers has been solved.

THE PENNSYLVANIA'S INVESTMENT IN NEW YORK CITY

Samuel Rea, president of the Pennsylvania Railroad, replying to criticisms in a New York daily paper, gives some data connected with the reasons why the road saw fit to build so grand and extensive a passenger station in the heart of New York. He says:

The Pennsylvania station, instead of being a monument to inefficiency and waste, and a white elephant, is a monument to foresight and the necessities of New York City and the whole country with which it does business, and more especially so for the Pennsylvania Railroad system, whose passenger revenues are about 20 per cent greater than the next largest railroad system of the country. Its revenue passenger mileage is about 13½ per cent of the whole country, notwithstanding it constitutes only about 4½ per cent of the country's mileage. Its ton mileage is also larger than any other and is nearly 13 per cent of the entire ton mileage of the nation's railroad systems; and that ton mileage doubles every twelve years, necessitating the construction of separate passenger lines and passenger facilities.

The station was constructed for the future and primarily for the long-distance passenger travel to and from New York, New England and the Southern and Western States, the local and suburban traffic to New Jersey being accommodated through the joint service so successfully inaugurated between Newark and New York through the Hudson Tunnels. This line is handling about 200 per cent more passengers than in its first year of operation. Pennsylvania station was opened seven years ago and in the first year's operation 9,862,434 passengers arrived and departed from it, whereas in the last year this has grown to 18,135,311 passengers.

You say that not for years will its handling capacity be completely utilized. What would the public say of a management with an actively expanding business which built for the present only? That station is built for the present and for the years to come, and is so adapted as to handle the increasing traffic of the Pennsylvania and its Long Island railroads and also such traffic as the New Haven will put into and through it; and when justified, more tunnels may be built, the station and yard facilities being adequate therefor. Does the public realize that Broad Street station, Philadelphia, which is served by several double-track railroad lines, running in every direction, has been opened for 36 years, and Pennsylvania station only seven years, and that the latter handles about as many passengers, and has larger revenue from passengers?

Did you stop to inquire why this terminal was built alone by the Pennsylvania Railroad system, or why that system had to determine, at the time it did, to extend into and through New York or forever terminate on the west bank of the Hudson? The building of this great work now would, by reason of its cost, be prohibitory. Until electric traction for steam roads was developed, no responsible railroad would approve of tunnels under the Hudson (for steam traction). Between 1890 and 1900 when the North River bridge was projected, a federal charter was procured to have it open to all railroads, and the Pennsylvania actively worked for its realization. In 1900 its directors agreed to use the bridge when built and guaranteed its share of traffic at an agreed rate, provided the other railroads would join. None of the other railroads did join, and while the matter was pending, electric traction on the Orleans railroad tunnel extension in Paris was inaugurated, whereupon the Pennsylvania turned its attention to tunnels. It incorporated its tunnel railroad system, purchased a majority of stock of the Long Island Railroad, constructed the extension and erected the Pennsylvania station; and since then has built the New York Connecting Railroad jointly with the New Haven. The whole project, outlined sixteen years ago, including vast improvements, passenger and freight, and also those of the Long Island Railroad, has been carried out and devoted to public use. The Seventh Avenue subway, long projected and which we had hoped would be completed when our station was opened, is now nearing completion and will be opened soon to accommodate our passengers.

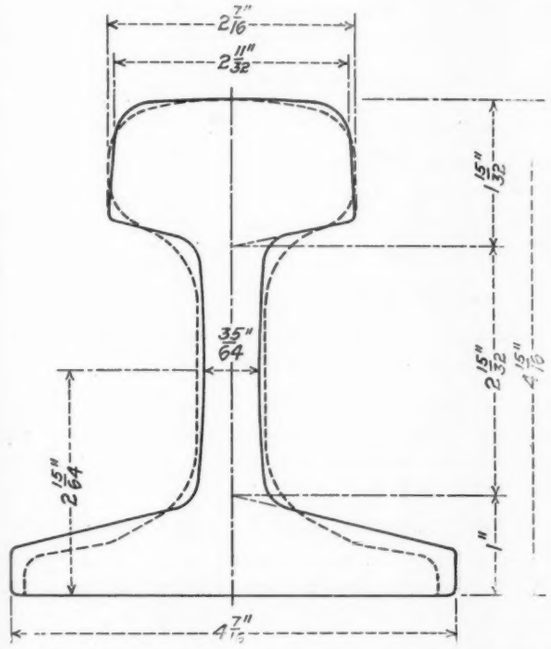
How would this great improvement have been secured otherwise? Would the city of New York have obligated itself for the cost, and the interest thereon, for a station for all the railroads, on the possibility that they would use it? Let me express the opinion here that a union station could not be built in that huge city that could conveniently accommodate all the rail traffic. If attempted, the cost, and the congestion around it, and on the approach streets, would make its useful operation impracticable.

As to co-operation in the development of the facilities of the port of New York, notwithstanding our railroads have in the past been reared on competition, and for most of the time unreasonable competition, and that they have fairly been compelled by state and federal laws to compete, if such compulsion be possible, they are today, in time of stress, co-operating to a degree never dreamed of and second to no other industry, and serving their government nobly. * * *

Track Work for United States Army in France

Special Designs of Frogs, Switches and Crossings Prepared to Meet Special Conditions in That Country

A COMPLETE set of standards for special track work including frogs, switches, crossings and cross-overs has been developed for use on the railways which the United States forces in France have taken over. The magnitude of the requirements of this character is indicated by the fact that 5,000 turnouts alone were specified in the first order. The designs for this work were prepared under the direction of S. M. Felton, director general of railways



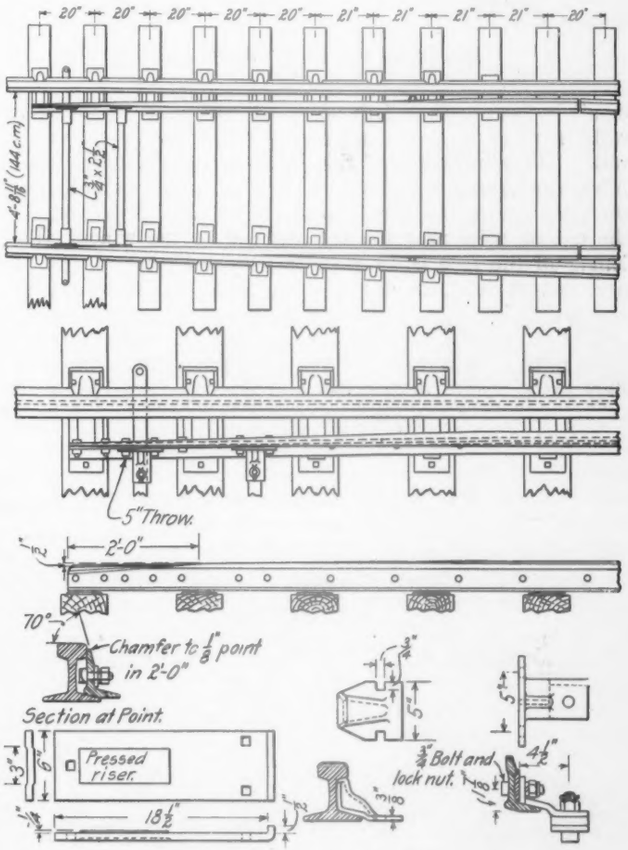
Full Lines Show A. R. A., 80 lb. Rail, Type B, Adopted for Use in France. Dotted Lines Show Rail Used by Northern Railway of France and State Railroads of Belgium

for the United States Army. He was assisted in the preparation of the plans by A. H. Mulliken, president, and other members of the Manganese Track Society.

Determination of the Designs

The main considerations which influenced the designs were: (1) Safety for standard railroad traffic based on American railroad practice; (2) Economy and simplicity in design to admit of quick production in large quantities for any emergency that might arise; (3) Standard sizes of materials that are carried generally in stock or are most readily procurable, and (4) American Railway Engineering Association standard layouts, with switches and frog details developed to meet the above conditions. An effort was also made to eliminate unnecessary cutting of rail in the manufacture of this special work.

It was necessary to proceed with the work before any really tangible information was available concerning the actual requirements or the nature of the track standards. Some information was obtained regarding materials which the French railways had obtained in this country previously which served as an approximate index. The 80-lb., A. R. A., type "B" section of rail was adopted rather than the French type, being of the same height as the French rail but better proportioned. The "B" section was selected because of its very heavy base, the government desiring to avoid chances of breakage on account of the rough handling the rail would be subjected to. The rails are laid to the French gage of 4 ft. 8 11/16 in. (144 cm.) and the narrow gage military railways use 25-lb., A. S. C. E. rails laid to a gage of 1 ft. 11⅝ in. (60 cm.). The first standard determined upon was a No. 8 turnout having a 16-ft. 6-in. switch, a No. 8 rigid frog and an 11-ft. guard rail, the No. 8 turnout being adopted because it is not contemplated that any of these tracks will be used for high speed movements. As the work progressed a ground-throw siwtch stand was determined upon and also No. 8 single and double-slip switches, with the alinement according to the American Railway Engineering Association typical layout, as given in Vol. 17 of the Proceedings for 1916. The government



16-ft. 6-in. Split Switch

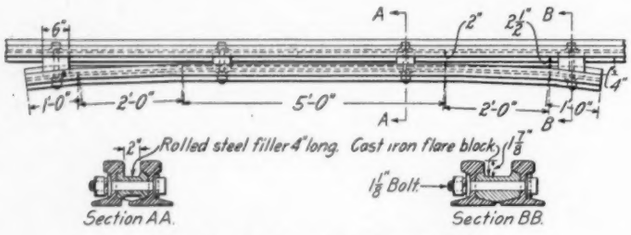
also called for additional turnouts for No. 12 and No. 6 frogs and also for a number of crossings of angles of 45, 60, 75 and 90 deg.

Turnouts Involve New Features

One of the drawings shows a standard 16 ft. 6 in. switch in which the switch and stock rails are supported on pressed steel slide plates, ⅝ in. thick by 6 in. wide, with pressed risers and with shoulders to hold a pressed steel rail brace. (The manufacturers were given the alternative of providing

½-in. slide plates with solid braces of malleable iron.) Two ¾-in. by 2½-in. connecting rods are attached to the switch rails with pressed steel open side pockets. The switch rail is braced by ⅜-in. reinforcing bars, 13 ft. 5 in. long. The throw is 5 in. and the heel distance 6¼ in.

The frog embodies a number of interesting features. It is built of standard 80-lb. rail with cast iron throat blocks, rolled steel fillers and a heel riser made of a rail with the head and base pressed to the desired shape. The design of the point is a special feature. The web and base of the point rail extend 4 in. beyond the actual point, the head being cut away on a curve of 15-in. radius. This arrangement has the advantage that an additional bolt can be passed through the point rail and the fillers and it eliminates the notches in the fillers at the point of frog. Another effective

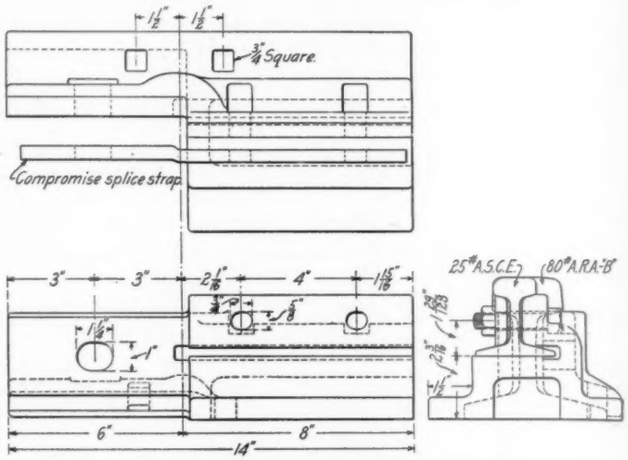


Details of the 11-ft. Guard Rail

detail is the planing of the flares in the heads of the wing rails in place of producing the flare by bending the entire rail. The advantages of this are that the standard rolled fillers can extend to the end of the wing, thereby eliminating the foot guard and that additional strength is secured by the use of bolts near the extreme end of the wings. The length of the frog is 13 ft. 6 in.; the bolts are of 1⅛ in. open hearth steel; the throat distance is 1⅞ in. to 2¼ in. and the flangeway is 1¾ in. wide.

The guard rail was made 11 ft. long to secure three of them from a 33-ft. rail. It has a compound flare, the main flare being ½ in. in two feet and the end flare 1½ in. in one foot. The guard rail is secured to the running rail by four 1⅛-in. bolts with cast iron flare blocks at the end and rolled steel fillers 4 in. long for the intermediate bolts. The use of guard railclamps was considered when the design was being made but it was decided that it would be unwise to employ them for the service imposed because of the difficulty that might arise from the loss of loose parts of clamps. With the type selected, the guard rail can be shipped complete with bolts and fillers in place and there is no opportunity for the loss of any parts.

Drawings were also prepared for a standard No. 8 turnout and a No. 8 crossover. These correspond very closely to the standard plans given in the Manual of the American Railway Engineering Association. The lead, tie spacing and other principal dimensions are identical, but in general the ties of the government turnout and crossover are 6 in. shorter than those shown on the American Railway En-

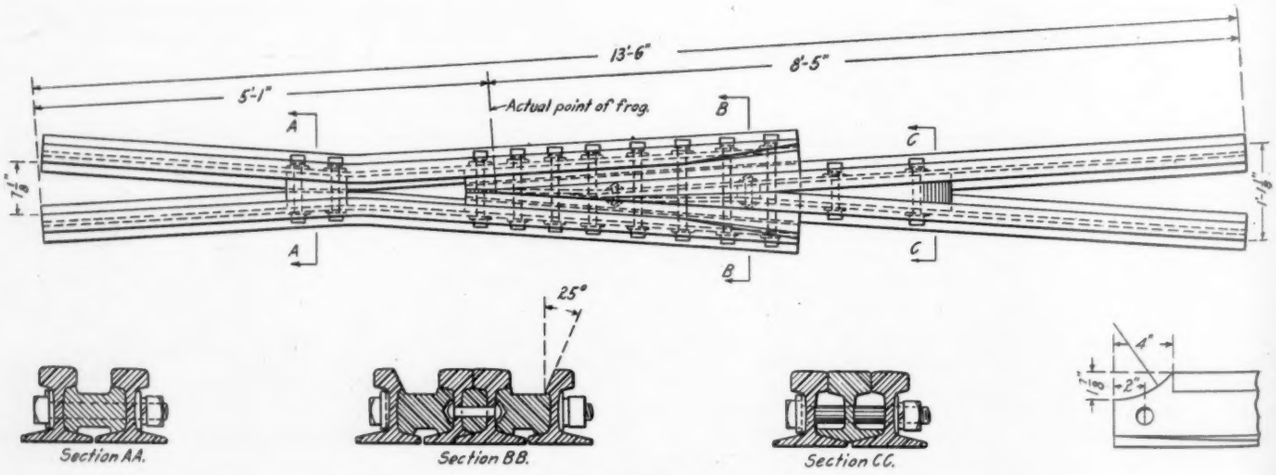


Compromise Joint for 25-lb. A. S. C. E. and 80-lb. A. R. A. Type B Rails

gineering Association plans. The standard switch stand is of the dwarf, parallel, ground-throw, Mansfield type, without provision for switch locks. The cover casting bears the marking 1917, U. S. A.

The Crossings Are Interchangeable

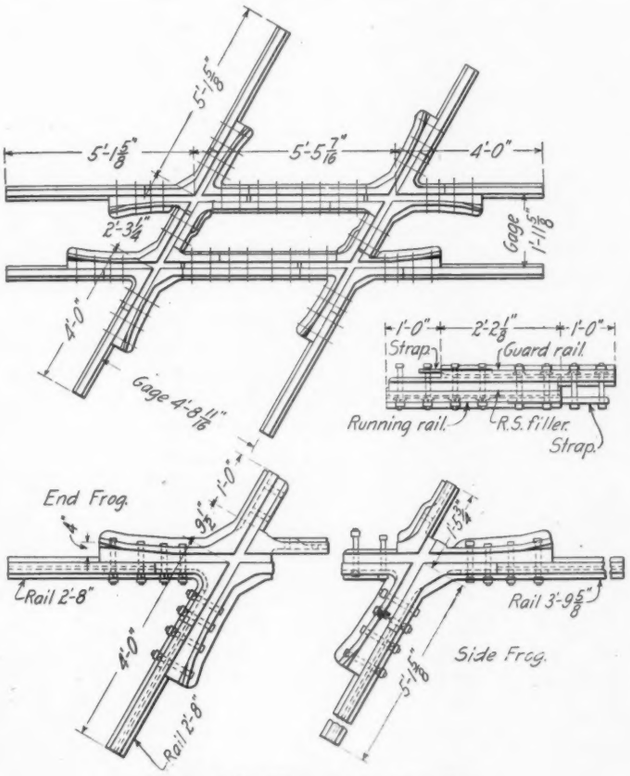
In connection with the crossings an intricate problem arose from the fact that the government engineers could not definitely determine the number which should be right hand or left hand, the principal crossing requirements being for the passage of narrow gage tracks over those of standard gage. In consequence of this situation it was deemed highly desirable to work out some scheme by which the crossings could be made reversible, that is, designed in such a way that they could be changed from right to left hand by a reassembling of the pieces. After a study of the



No. 8 Rigid Frog

problem, the conclusion was reached that this could only be solved in a practical way by making the angular crossings of cast manganese steel. In general it was the idea in connection with this track work that the conditions imposed by the service did not demand the use of manganese steel, but owing to the peculiar problem imposed in the crossings an exception was made in that case.

One of the drawings shows the details of the 60-deg. crossing and illustrates how the special requirements were secured. Each crossing consists of two manganese steel end frogs and two manganese steel side frogs. The interior arms of these frogs are of such length that, when directly connected, they produce a complete crossing of one narrow gage (60 cm.) track over another. However, two sets of connecting rails are provided with each crossing, each connecting rail consisting of a running rail, guard rail and filler. When these are inserted between the frogs on the



Reversible Manganese Crossing

rails of one track, the crossing becomes standard gage for the opposing track. The crossing can be made right hand or left hand, depending upon which pair of the rails these connecting rails are inserted in. By procuring two more sets of connecting rails the crossing can be made standard gage for both tracks.

It is expected that most of the narrow gage track used in France will be of the portable type fabricated in sections with steel ties, each section of track having square ends. To facilitate the connection of such tracks to the crossings the exterior arms of the crossings are fitted with short sections of rail of such length that square ends are secured, when either or both tracks are for narrow gage.

The crossings were detailed to correspond to 80-lb. A. R. A., type B rail and as connections must be made in the narrow gage track to 25-lb. A. S. C. E. rail, four sets of compromise joints were provided with each crossing. This unusual jump in the sizes of rail called for the design of a compromise joint that is rather out of the ordinary and it is shown in one of the drawings.

Slip Switches

In the single and double slip switch designs, the frogs and switches are duplicates of those for the standard No. 8 turnout. The plan also provides that the joint in the stock rails coincide with the heel of the switch rail so that the two joints can be made with the use of a common 22-in. cast iron heel block. Provision against rail creeping is made by means of a ½-in. by 2-in. by 4-ft. 4-in. anti-creeper attached to this joint and extending over three ties. The knuckle rails and movable points are reinforced with easer rails. Both the double and single slip switches are provided with double hand throw devices interlocked to insure that the movable points will be in proper position for the routing given by the position of the switch point.

THE RECONSIGNMENT PRIVILEGE*

By H. W. Johnson

Superintendent Freight Loss and Damage Claims, St. Louis-San Francisco

That the reconsignment privilege granted by carriers in their tariffs is a pernicious form of rebate is a statement which is hardly justifiable—that it has become a part of the commercial customs of the country or rather a commercial necessity, is well taken. That the reconsignment privilege is abused very frequently and, in fact, so often that it is a distinct detriment to the shipping public and the railroads throughout the country is a fact which anyone dealing with the various phases of this subject during the past few years will not deny. In order to set forth the abuses to which this privilege has been subjected, it is first necessary to outline what may reasonably be considered the intent and legitimate purpose of the privilege, which I believe is fairly stated in the following:

(1) Time consumed in transit is saved to the shipper. Under the reconsignment privilege, shipments may be forwarded in the general direction of the market, billed to the shipper or his agent as the consignee, thus the shipper, instead of holding his product at the point of origin, has it at or en route to the market where the prospective purchaser may inspect it, thus facilitating sale, having shipments at point where delivery may be made promptly and incidentally relieving the shipper's warehouse or storage facilities.

(2) Through the reconsignment privilege, shippers are enabled to dispose to a good advantage of shipments that are refused at destination through no fault of the shipper or carriers.

(3) By the privilege of reconsignment, in the issuing of exchange bills of lading, shippers and consignees are enabled to conceal the name of either the shipper or the consignee as well as the source of supply or the location of the demand.

It follows, therefore, that all practices contrary to these are abuses of the reconsignment privilege, such as:

(1) Holding shipments in cars an unreasonable length of time after arrival at destination for purpose of speculation on rising markets.

(2) The intention of the application of certain rates may be defeated and a monetary advantage may be realized in some instances, which was not contemplated when the reconsignment privilege was published and the rates were made, in the following manner:

Where tariffs allow certain commodities the privilege of intermediate markets, for instance, live stock, which unloads at a given stock yards ostensibly for feed and rest and for the privilege of the market, are forwarded to destination by change of waybill heading and on through rate. The abuse

*This is one of the papers submitted in the Reconsignment Privilege Contest. The two prize winning papers have previously been published.

may consist of live stock having actually been sold and no record thereof given to the railroad company, or substituting other live stock in place of the original shipments.

A broker at a given concentrating point purchases a shipment for a client in another city and reconsigns the shipment that has arrived at the concentrating point to the final purchaser, on basis of the through rate, which in many instances is the same rate as that which has already accrued up to the point of reconsignment; the broker can thus make a profit on what would have been the local rate to the ultimate destination, provided shipment had actually been purchased at the reconsigning point, and reshipped under new contract to final destination. This occurs on such commodities as grain and hay.

(3) Under the reconsignment privilege on shipper's order shipments, a broker may do business on capital invested in shipments that are in transit and have not been actually sold to the consignee by drawing draft upon a prospective purchaser and in case original purchaser does not accept shipment, the reconsignment privilege permits the broker to draw another draft upon another prospect.

(4) During the past few years, since the carriers have undertaken to enforce rules and regulations between themselves governing the use of cars in accordance with the ownership of the equipment, permitting them to be loaded only in the direction of the car owners, the reconsignment privilege has enabled shippers to defeat these regulations in a great many instances by billing shipments to a point to which they are allowed to be loaded, then change the final destination, contrary to the regulations referred to, which privilege cannot be denied to shippers under reconsignment tariffs.

A specific instance that has come to my attention recently of what might be termed an abuse or at any rate a very excessive use of the reconsigning privilege is a carload of potatoes billed from A, a point in the far West on road A, February 15, arrived at B, first destination on road B, February 23; reconsigned February 26, arrived at C, second destination on road C, March 1; reconsigned March 7, arrived at D, third destination on road C, March 9; reconsigned March 10, arrived at E, fourth destination on road C, March 11; reconsigned March 14, arrived at F, fifth destination on road D, March 16; unloaded March 23. This shipment occupied the car 36 days, during which time, it was held for reconsignment an aggregate of 20 days. I believe it is safe to say that not more than $10 demurrage was assessed during the entire time, allowing for free time and time to transmit notice to the shipper and secure disposition in each case. It is my understanding that the tariffs of none of the railroads in question provided for a reconsigning charge.

The result of abuses of reconsigning privilege as stated are obvious, and consist principally of the following:

Holding cars out of service unduly, for which only a nominal charge for demurrage or car service can be made. Even the demurrage charges are defeated by the abuses of reconsigning privilege in that the shipper may, in order to prolong the time in transit, name several destinations, and have car set out at each destination. The shipper is released from any payment of any car demurrage charges by giving another destination within 24 hours after he is notified that shipment has reached last named destination. This is particularly noticeable in connection with the handling of fruit and vegetables on which there is no reconsigning charge. Delay is also accomplished after car reaches destination by simply having car re-switched a number of times, paying a nominal charge for the switching service, which is far less than the advantage accruing through delay necessary to switching cars across and through terminals, which are sometimes congested, requiring considerable time. This is especially true on rising markets. In this connection, the Interstate Commerce Commission holds the view that, without specific qualification, the term "Reconsignment" includes changes in destination, routing or consignee (Administrative Rule 7). Thus consignees are allowed additional free time under the demurrage rules when cars are held for any of these purposes.

This result is naturally accompanied by the further far-reaching and expensive detriment of unduly occupying railroad tracks and terminal facilities which should instead be used for the purpose for which they were built. Another result of these abuses is the extra handling of cars in switching out of and into trains at reconsigning points and shifting to and from designated tracks in terminals, including the expense incident thereto.

The final result of these abuses is to occupy railroad facilities unduly, thus limiting them for service for which they were intended, and causing inconvenience to the shipping public and loss to the railroads.

I am of the opinion that the cause of these abuses is twofold, first the construction of the rules and regulations governing, which, however, is not necessarily faulty, but impracticable of application to all conditions; second, the small amount charged or the absence of charge for reconsignment, for switching, and car handling incident thereto as well as for demurrage and track rental while cars are held for reconsignment.

In connection with the former, every condition should be set forth (some of which are not now covered) in the rules and regulations, in order that an adequate charge may be published to cover.

In connection with the latter, there is no charge for reconsignment of fruit and vegetables over a large part of the country; there is no reconsignment charge for coal and certain other commodities when reconsigning orders are given before shipments reach destination, or within a specified time thereafter.

Reconsignment charges that are made are entirely inadequate to cover the expense, to say nothing of a penalty that should in my opinion be imposed upon practices that are apparently unjustified. Switching charges at terminals are generally so low that it is very often profitable for the consignee to have his shipment re-switched a number of times in order to gain the time necessary to handle the car through terminals. The time allowed under car demurrage rules free of charge, on cars held for reconsignment or re-switching, is very often too great, especially when connected with other free time. The demurrage charge itself on cars held for reconsignment is entirely too low.

The remedy necessary to reduce the reconsigning privilege to a point where it will best serve the shipping public is an adequate charge for services rendered in connection therewith, including reconsigning charge, switching charge, car demurrage charge, etc. Such charges, in order to prevent or at least discourage some of the abuses to which the reconsigning privilege is subject, should be so constructed as to place a heavy penalty upon those abuses, as for instance, a charge equal to twice the ordinary charge should be made for a second reconsigning; demurrage rates on cars held for reconsigning should be much higher than the rates applicable to cars held for loading and unloading, especially after the first 24 hours, and should be graduated to a higher scale each day thereafter, until cars are released; each abuse, where possible, should be taken care of in a like manner.

TIES BOUGHT IN CANADA IN 1916.—A total of 7,572,878 ties were bought by Canadian railways in 1916, according to a bulletin of the Interior Department's Forestry Branch, based on reports received from 34 companies. The average value was 42 cents a tie as compared with 7,399,753 ties bought in 1915 at an average of 44 cents a tie.

The Railway Situation in Russia

Henry Miller, of the Railway Advisory Commission, Describes Conditions and Gives Recommendations

A MUCH more optimistic view of the Russian railway situation than that which has become prevalent in the United States has been brought to this country by Henry Miller, formerly operating vice-president of the Wabash, who went to Russia in June as a member of the United States Railway Advisory Commission, and has just returned with a report. The commission, of which John F. Stevens is chairman, was accredited by the State Department and was sent to Russia to advise with and assist in every practicable way in the handling of the grave transportation problems which the war had thrust upon the Russian railway system. It has made a thorough investigation of the situation, made many suggestions for improved methods which have been adopted by the Russian railway authorities and has arranged for the despatch of railway materials and supplies from this country to Russia. At its recommendation, the Russian Railway Service Corps, consisting of 350 experienced railway operating and mechanical officials, has been recruited in this country under the direction of S. M. Felton, director general of railways, and sent to Russia to assist in the operation of the railroads and to act as instructors to Russian railway men for the purpose of building up a more efficient operating organization.

Some interesting information regarding the present condition of the Russian lines and the commission's recommendations were given by Mr. Miller in an interview with the *Railway Age Gazette* while he was in Washington last week making his reports to the railway and governmental authorities.

Physical Property Excellent

"Russia is blessed with abundant crops and ample live stock and other foods and has resources beyond conception," said Mr. Miller. "The fear that the railways will fail to keep the army and civil population supplied is unfounded and has been dispelled by the American Railway Commission, who, after full investigation, during which the track, locomotives, cars and other facilities of the main trunk lines were examined, became convinced that by supplementing and reinforcing the operating department, together with the additional locomotives, cars and spare parts now arriving from America, the transportation system of Russia will fulfill all reasonable requirements. The condition of the railways has been grossly exaggerated. Like our own, they are at present overtaxed with unusual traffic, but in many respects they are quite all right and their physical property and terminals are excellent.

"For instance, Moscow, the 'Hub' of the nation, has a well constructed belt line that has no superior anywhere, encircling the whole city connecting the nine railways radiating from there like spokes in a wheel, with commodious interchange yards at all intersections and no congestion of traffic of any consequence to interfere with the free movement of trains.

"The reports showing 25 per cent to 30 per cent of the locomotives 'sick' on the Russian railways is a fiction of the statistics largely, caused by the order to classify as 'sick' those needing repairs requiring withdrawal from service 12 hours or more, thus including mere running repairs. A rational analysis of the situation on the Trans-Siberian Railway reveals not exceeding 15 per cent of the locomotives 'sick' under a proper classification based on the practice of American railways."

The commission arrived in Petrograd on June 13 after a ride of 6,000 miles over the Trans-Siberian Railway from Vladivostok and its members were then taken on a trip over the railway lines in the heart of European Russia, from Petrograd to Moscow, south into the coal fields and back by way of Kiev, this circuit taking them into the territory just back of the fighting front. The first problem undertaken was to work out a plan for expediting the transportation of supplies into Petrograd and to the army, and the next task was to arrange for the movement of coal into the city of Moscow, a great traffic center served by nine railroads, and Warsaw.

Operating Methods Reorganized

"As far as the railways are concerned," said Mr. Miller "we found the great problem to be a question of operation. The physical properties are all right. As one of the first steps, we arranged to divide the railroads into divisions of approximately 300 miles, each in charge of a superintendent and a staff of 13 assistants, including trainmasters, train despatches, master mechanics, traveling engineers, etc., in order to provide the close supervision necessary to promote efficiency. We found that their practice was to operate their engines and crews on short turn-around trips. The men were assigned to their engines, which practice resulted in a very small mileage for each locomotive, because when the men needed rest or laid off on account of sickness or for other causes the engine was also taken out of service. By a plan of pooling the men and their engines the locomotive mileage was immediately doubled and the capacity for handling traffic was largely increased, so that it became possible with the existing power and facilities to clear up most of the congestion by the end of August. The railways are now clear and effective operations have been established over the whole system.

Equipment

"Russia has approximately 50,000 miles of railroad, of which about 60 per cent is owned by the government and about 40 per cent privately owned. The railroads have about 20,000 locomotives, whose average age is 24 years, most of them being compounds. About 10 per cent are wood-burning, 5 per cent oil-burning and the balance coal-burning. They have an average tractive force of 18,000 lb. We found about 15 per cent of the locomotives in bad order. They also have 580,000 freight cars of an average capacity of about 16 tons, of which we found about 8 per cent in bad order. The freight cars, both on the government lines and the privately-owned lines, are pooled and handled by a central car distributing office at Petrograd. The practice is to apportion a certain number of cars monthly to each of the lines based upon their traffic requirements as determined by previous experience.

"About 20 per cent of their freight cars have brakes and only the 13,000 American-built cars are equipped with air-brakes. Braking is done by hand, the practice being to use a brake van for every fifth car in a train and to station a brakeman at each brake.

"The Trans-Siberian line, including a detour line just constructed via the Amur river, is practically all double-tracked from Vladivostok to Omsk, a distance of about 4,000 miles. At Omsk the line divides in the form of a Y with branches extending to Petrograd and Moscow and the traffic is correspondingly divided, so the Trans-Siberian line is practically equivalent to a complete double track line.

"The Russian railroads are operated after the German

system, which differs from the American system in that train movements are not governed by time tables or train schedules, but trains are classified and their rights on the road are governed by the conductors and enginemen. Time tables are only for the information of the public. There are no train rules or other operating rules corresponding to the American code of train rules and no train orders are issued except for slow orders. Trains are operated by the staff system on single track and by the telegraph manual block system on double track. The absolute block system is used in spacing trains.

"There is almost an entire absence of what in America is termed the operating department, and it is this void that the American commission has attempted to fill in order to increase the efficiency of the railways. It is for this purpose that the corps of 350 experienced railroad men from the United States has been sent to Russia to carry out the recommendations made by the commission and to act as instructors to the Russian railway men in American railway operating methods. It is hoped that by this means it will be possible to build up an efficient organization from among the Russian railway men themselves."

Railway Age Gazette Patriotic War Number Used as Handbook

Mr. Miller took occasion to make some flattering comments upon the Patriotic War Number of the *Railway Age Gazette,* which was issued on June 22. "The *Railway Age Gazette* War Number was used as a handbook by the American Railway Commission," Mr. Miller said. "Many of the things that were set out as being necessary to increase the efficiency of American railways were similar to those advocated by the commission for the Russian railways. Special Commissioner Oustrougoff, who was appointed by the Provisional Government to put our recommendations into effect, read it with the greatest interest, and requested that he be permitted to keep the copy for his information and guidance, his intention being to have some of the articles translated for distribution and use on the Russian railways."

Many of the recommendations and findings of the commission are set forth in a "Fourth of July proclamation" issued by the commission at Petrograd for the purpose of conveying to the Russian people a message regarding its purpose and the desire of the people of the United States to co-operate.

This statement was as follows:

The Commission's Proclamation to the Russian People

"The United States Railway Advisory Commission is accredited by the State Department of the United States to its ally Russia. The object of the commission is, as has been stated, to advise with and to assist in every practicable way in the handling of the grave transportation problems which the war against a common enemy has thrust upon the railways of Russia.

"It seems fitting that upon this, the anniversary of our natal day of Independence, this commission should convey to the people of Russia a message declaring not only its purpose but also something as to what it has accomplished and which it is believed will cheer the nation and convince it that the United States stands shoulder to shoulder with its great ally in the prosecution to a successful conclusion of the war against the venomous enemy of democratic freedom.

"The commission has been in Russia about five weeks. During this time it has met with the officials of the Russian railways and has discussed fully and freely the various problems confronting the railways. It has been met everywhere and at all times with the utmost spirit of cordiality and co-operation on the part of those officials. It has found, what was no surprise to it, that as masters of technique the Russian railway officials have no superiors in the world. It has found that in many ways their practices are among the best and that from a basic standpoint the Russian railways are intrinsically sound—backed as they are by the enormous latent resources and the vast population of this wonderful country.

"At the same time, it believes that a judicious mingling of the best Russian and American railway practices will be of great benefit to the railways of Russia, and in this belief your officials are in hearty accord and have given their approval to the following suggestions made by this commission:

"An improved system of train operation, a better divisional organization, whereby closer supervision can be maintained, and a revision of engine runs whereby a greater capacity of each engine and car can be obtained, resulting in an improvement in the movement of traffic.

"The construction of locomotive erecting shops at Vladivostok where the immense number of locomotives coming from the United States can be erected and put into service much more speedily than has been the practice heretofore.

"The working day and night of all locomotive repair shops so that the great number of out of repair locomotives may be reduced and that they may be put into service where they are so urgently needed.

"That the 'per diem' rate, or charges of one railway against another for the use of cars, be doubled, and that also the charge for holding cars for loading or unloading be doubled. This to insure prompt handling and release of cars in a reasonable time.

"That a supply department under a general storekeeper be installed, who shall be responsible for the maintenance and distribution of the vast amount of material and supplies needed for the operation and maintenance of the roads, the duties of such officer to include the reclamation of worn material and the reissuing of such as may be found serviceable.

"But the great imperative immediate necessity which confronts the railways of Russia to enable them to not only maintain its armies at the front, but also to support in comfort its civil population, who equally with its soldiers are fighting the great battle for freedom, is a great increase in the number of locomotives and freight cars. On this point the commission are entirely in accord with the railway officials and with the Russian people. To the end that this absolutely necessary want shall be supplied as quickly as can be done, this commission has cabled the Administration at Washington advising the immediate construction of 2,500 locomotives and 40,000 freight cars to be added to the equipment of the Russian railways.

"This means, of course, an extension of credit by the United States to Russia of some 750 million roubles. This matter has no commercial aspect for the commission has pledged what to it is dearer than family or life itself, the good faith and honor of its country.

"The commission has under further consideration the furnishing of raw material, tools and shop machinery to any extent that may be found advisable after careful consideration with the Russian officials, and stands ready to aid with its advice and counsel in any and all matters wherein it may be requested.

"In closing, it desires to express its hearty appreciation of the aid given it by the efficient Minister of Ways of Communication and his staff of able assistants. It knows that in their hands the future of the Russian railways is secure and it believes with the aid and material assistance which the United States is giving to its great Ally, that Russia will continue to sustain its part in the desperate struggle for freedom which is now convulsing the world."

Refrigerator Cars for the Baltimore & Ohio

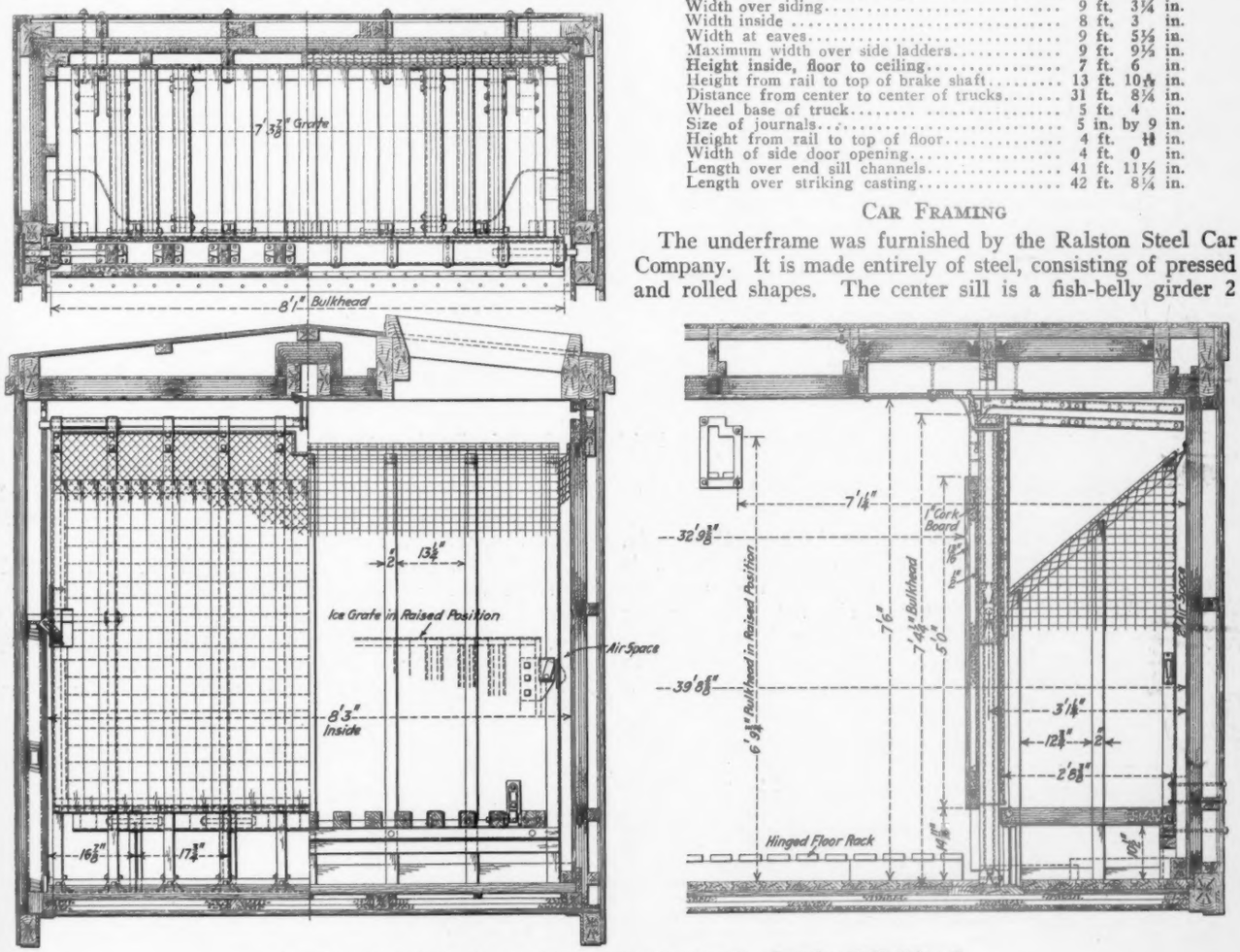
The Insulation Applied Without Intervening Air Spaces; A Free Circulation of Air Permitted Around the Ice

THE Baltimore & Ohio has recently constructed in its own shops some refrigerator cars that contain many interesting and new features of design. Contrary to the customary practice the insulation throughout the car is applied without any air space between the different layers. The purpose of this arrangement is to eliminate the so-called dead-air space and to better support the insulation. It has been found that it is difficult to maintain a tight car with the layers of insulation separated, because of the constant weaving of the car and further that the only *real* dead-air space is in the insulation itself. By applying the various layers of the insulation directly on themselves the construction of the car is less complicated and the insulation can be better supported and it will not deteriorate as rapidly.

A careful study of refrigerator car design has also shown that the material in a car will be better refrigerated if the air in the car has a direct and positive circulation. To obtain this the bulkhead of the ice chamber was made solid with ample openings at the top and bottom and the load is held above the floor on racks. To obtain greater effectiveness from the ice, a wire netting is provided to hold it which permits a free circulation of the air around it. With the ice thus held away from the sides and end of the car, less heat is absorbed through the car walls. The bulkhead is insulated so that it too will not transmit heat to the ice, but instead will guide the cold air down to the bottom of the car for circulation. The insulated bulkhead is of further benefit in that it prevents to a large extent, the condensation of moisture on the car side of the bulkhead which is liable to spoil the material placed against it.

These refrigerator cars are of 70,000 lb. capacity and weigh 54,800 lb. They have the following general dimensions:

Length inside	39 ft. 8⅝ in.
Length between ice boxes	33 ft. ⅞ in.
Length of outside over body	40 ft. 10⅞ in.
Width over siding	9 ft. 3¼ in.
Width inside	8 ft. 3 in.
Width at eaves	9 ft. 5⅛ in.
Maximum width over side ladders	9 ft. 9⅛ in.
Height inside, floor to ceiling	7 ft. 6 in.
Height from rail to top of brake shaft	13 ft. 10⅛ in.
Distance from center to center of trucks	31 ft. 8¼ in.
Wheel base of truck	5 ft. 4 in.
Size of journals	5 in. by 9 in.
Height from rail to top of floor	4 ft. 11 in.
Width of side door opening	4 ft. 0 in.
Length over end sill channels	41 ft. 11½ in.
Length over striking casting	42 ft. 8¼ in.



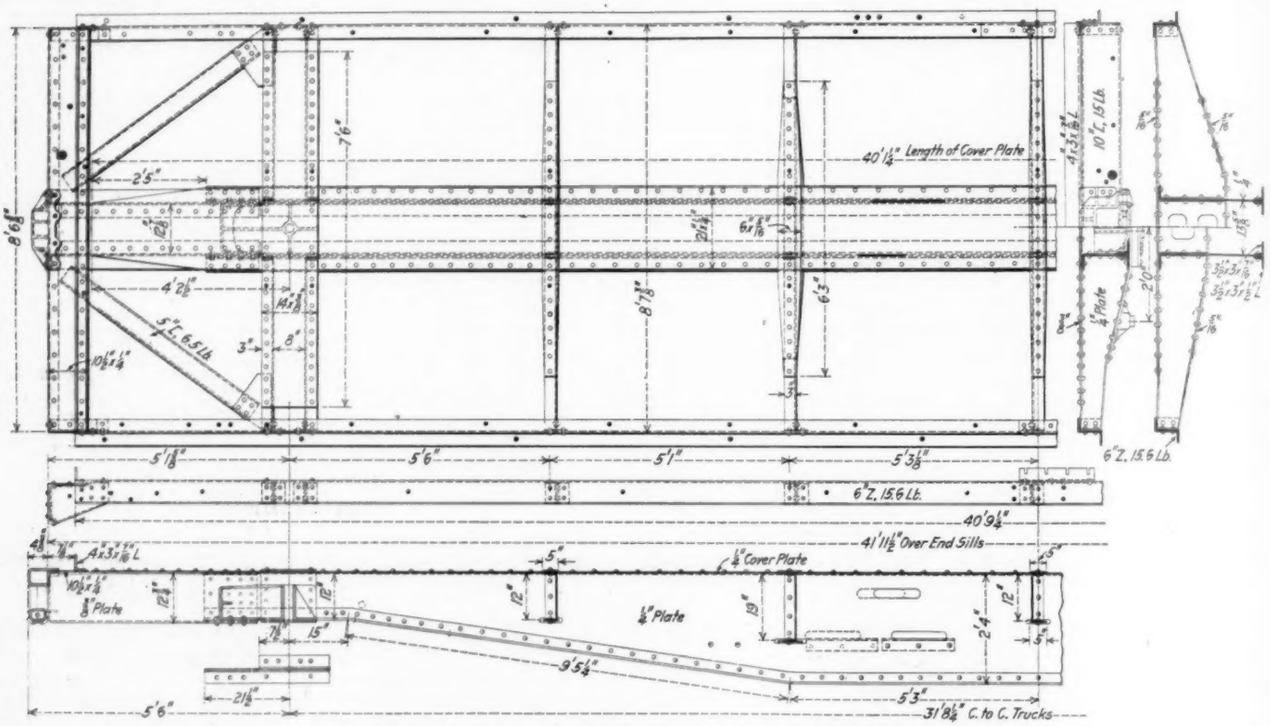
Sections Through the Ice Bunkers, Showing the Insulated Bulkhead

Car Framing

The underframe was furnished by the Ralston Steel Car Company. It is made entirely of steel, consisting of pressed and rolled shapes. The center sill is a fish-belly girder 2 ft. 4 in. deep at the center and 12¾ in. deep at the ends. The webs are of ¼ in. plate, flanged outward at the top to receive the coverplate. They extend a short distance back of the body bolsters where they are riveted to the ⅜-in. draft sills. The coverplate is 21 in. wide by ¼ in. thick and extends between the end sills. The bottoms of the center sill webs are reinforced by 3½-in. by 3-in. by ½-in. angles on the outside and 3½-in. by 3-in. by 7/16-in. angles on the inside. The body bolsters are ¼-in. pressed steel pans shaped to fit into the center and side sills. They have 14-in. by ⅜-in. top coverplates and 14-in. by ½-in. bottom

coverplates. The crossbearers are ¼-in. pressed steel pans with 5/16-in. top and bottom coverplates. The side bearings are located on 48-in. centers.

The end sills are 10-in., 15-lb. channels, reinforced at the top by 4-in. by 3-in. by 7/16-in. angles set 7⅛ in. back of the face of the channels. The end sills are braced at the center by 5-in., 6.5-lb., channels extending back to



Steel Underframe of the Baltimore & Ohio Refrigerator Cars

the ends of the body bolsters. The side sills are 6-in., 15.6-lb. Z-bars.

The side posts and braces are 5-in. by 2-in. Oregon fir, being set into malleable iron pockets doweled into the side and end framing. A tie rod is located at each post, extending through the side plate and side sill. The carlines are white oak, 1¾ in. thick. The ridge pole is secured to alternate carlines by ¼-in. pressed knees bolted to both the carlines and the ridge pole. The flooring, lining, sheathing and ceiling are Oregon fir. The flooring is 1¾ in. thick, and the lining, sheathing and the ceiling are 13/16 in. thick. The roofing boards are of the same material and are covered with the Murphy XLA outside metal roof. The end plates are 3 in. by 9 in. and the side plates are 3 in. by 8 in.

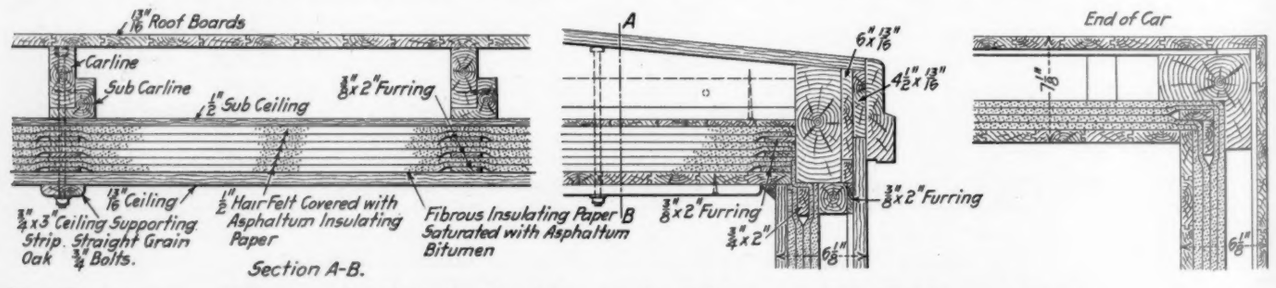
Insulation

The method of insulating these cars, as stated above, is novel in contrast to the general practice followed. No attempt has been made to provide dead-air space between the successive layers of insulation and greater care has been taken in its application.

The cross sections show that below the 1¾-in. flooring there is a 1-in. air space with 1-in. by 1-in. floor strips. A layer of felt paper is applied on top of two thicknesses of 1-in. corkboard. Before the felt paper is applied the top surface of the corkboard is coated with hot odorless asphaltum to tightly seal all joints. Beneath the two 1-in. thicknesses of corkboard there is a 13/16-in. sub-floor.

The 1¾-in. flooring is supported on 3-in. by 3-in. nailing strips which are bolted directly to the sub-floor and the crossbearers of the underframe. The felt paper extends in one piece from side to side of the car, the ends extending up between the corkboard insulation on the sides.

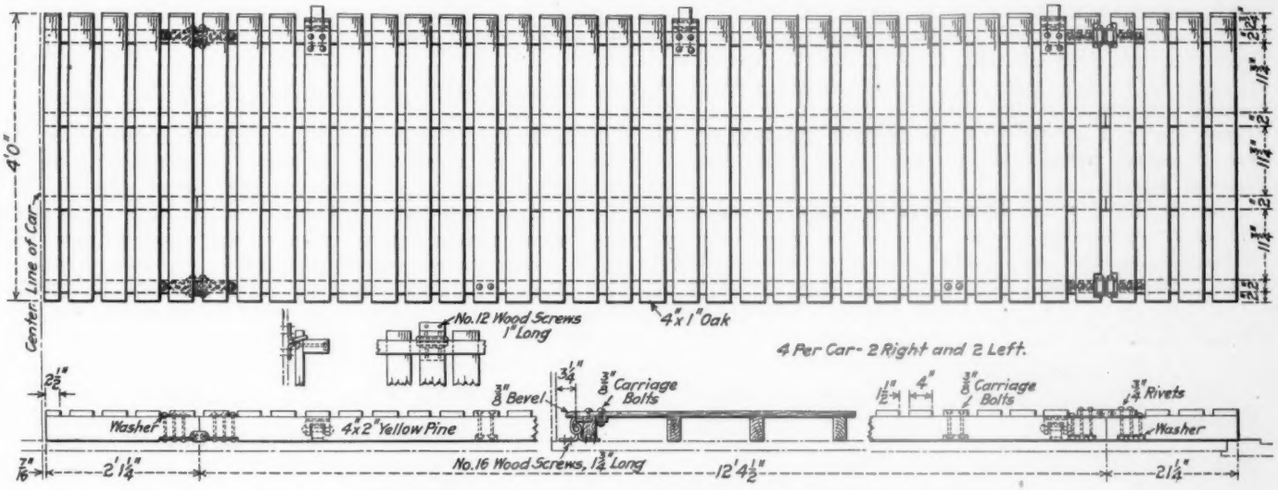
The lower part of the siding is insulated with four layers of ½-in. corkboard. The inside lining is beveled at the bottom and caulked to prevent water on the inside of the car seeping through into the insulation, causing its deterioration. The felt paper extends throughout the entire side of the car between the inside lining and the insulation. Above the corkboard there are four layers of ½-in. hair-felt, covered with asphaltum insulating paper, laid directly on each other with no air space between them. They are held at the belt rails by ⅜-in. by 2-in. furring strips as shown in



Method of Applying the Insulation to the Baltimore & Ohio Refrigerator Cars

the illustrations. The insulation passes around the corners of the car in continuous pieces to better provide a tight insulated joint. At the top the outside layer of insulation is lapped up into the ceiling insulation around the side plate.

The insulation in the ceiling is heavier than that on the sides, as it has been found that the absorption of heat is greater at top of the car than on the sides. Six layers of ½-in. hairfelt are used here. These are placed directly on top of the 13/16-in. ceiling without any air spaces between them. On top of the insulation is placed a ½-in. subceiling which is nailed to the carlines. The weight of the ceiling with the insulation is too great for it to be substantially held by nails, therefore, ¾-in. by 3-in. ceiling support strips are placed at every third carline and are bolted to the carlines by ⅜-in. bolts countersunk into the carlines.

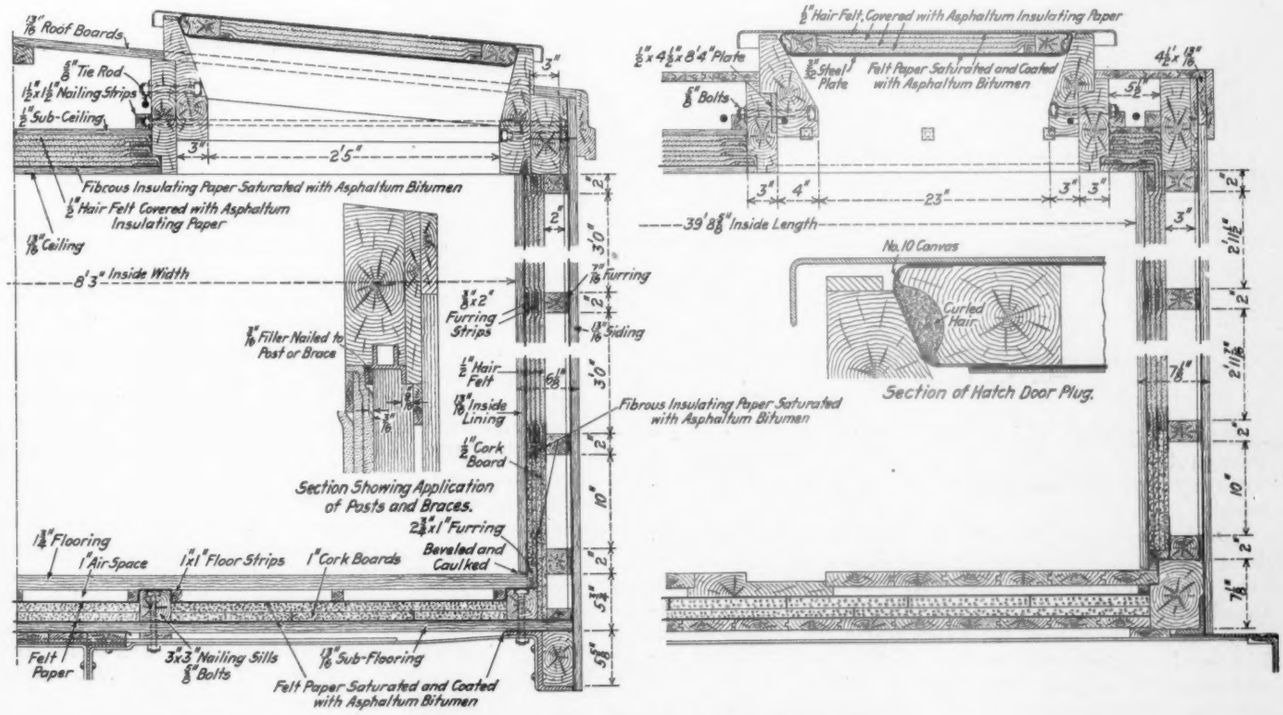


Details of the Hinged Floor Rack Used in the Baltimore & Ohio Refrigerator Cars

Ice Boxes

The ice boxes are of particular interest, being so constructed that a 2-in. air space completely surrounds the ice. The ice is contained in a heavy wire netting which exposes it to the air circulating through the car. The ice boxes are provided with a Bohn insulated collapsible bulkhead, which is 7 ft. 4¼ in. high, having an opening at the top and bottom for the circulation of air through the ice box. The insulated portion of the bulkhead is 5 ft. in height and this consists of a 13/16-in. lining, a 1-in. layer of corkboard and a ½-in. lining.

The purpose of insulating the bulkhead is to insure that the ice bunker will not cool the perishable freight piled up against it to a lower degree of temperature than obtains in other parts of the car. This feature is an exceptionally important one, as bananas and other fruit, as well as eggs,



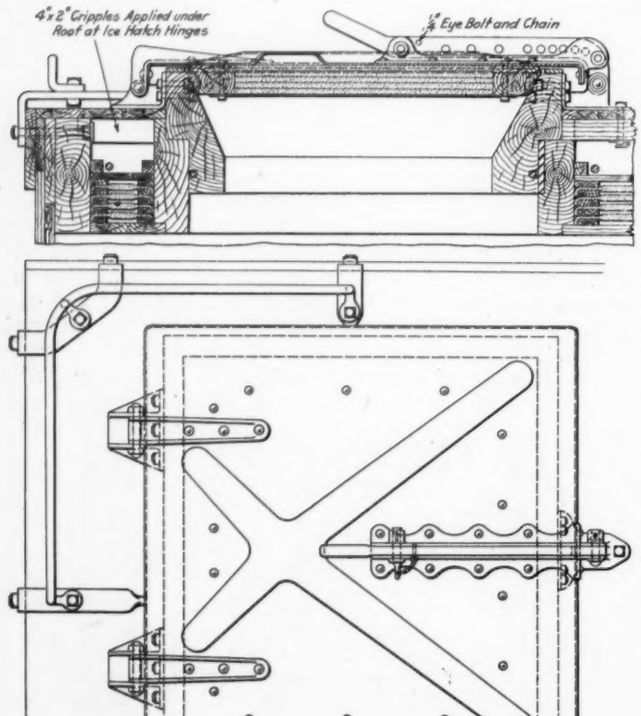
Sections Showing the Ice Hatch Insulation

have been known to freeze when piled up against the bulkhead of ice bunkers that were not insulated. The insulated bulkhead also effects a more positive circulation through the car.

The wire netting which holds the ice is cut away at the top to allow swinging the collapsible bulkhead into place at the top of the car. Without this bulkhead the netting would ordinarily extend up to the top of the ice box.

To further assist in the positive circulation of the air, a floor rack made up of 1-in. by 4-in. boards, spaced 1½ in. apart, is hinged to the sides of the car and when in the lowered position it is 4 in. above the floor of the car. This allows the cold air to work up through the load equally throughout all parts of the car and better refrigerates the material carried.

Considerable care has been taken to properly insulate the walls surrounding the ice box. The illustration shows how thoroughly this has been done. The runway for the collapsible bulkhead at the center of the car is insulated by six



The Ice Hatch Door

layers of insulation which extend around it. The spaces between this runway and the hatchway, and between the hatchway and the end of the car are as thoroughly protected.

The ice hatch and door are particularly well constructed. A ½-in. plate, 4½ in. by 8 ft. 4 in., extends across the car in the hatch frame at the inner side to give it strength. In addition to this a bar ⅜ in. thick by 1⅜ in. wide extends around the top of the hatch frame for reinforcement. The hatch door is made with a 3/32-in. steel plate on the underside and a ⅛-in. pressed steel plate on top; these are bolted to the door frame by ⅜-in. carriage bolts. The upper plate is ribbed to give it additional strength and is flanged downward on all four edges to protect the joints from rain. Between the steel plates four layers of ½-in. hairfelt with felt paper above and below are applied for insulation. The lock bar is so designed that the hatch door must be tightly closed before the door can be locked. A series of holes are provided in the lock bar to mesh with a hole in a bracket attached to the top coverplate of the door, to permit holding the hatch door open at desired heights when the car is used in ventilator service.

These cars are equipped with the Westinghouse type K brakes. The trucks used were taken from dismantled steel hopper cars and have 5-in. by 9-in. journals. The capacity of the trucks is 80,000 lb. The ice bunkers have a capacity of 15,000 lb. of ice.

"SHIPPING DAYS" ON THE B., R. & P.

The Buffalo, Rochester & Pittsburgh was probably the first road to inaugurate "shipping days" on which l.c.l. freight would be received for various destinations, placing this plan in effect on the Pittsburgh district and on lines as far north as Punxsutawney and Du Bois, Pa., on July 6. The plan was later extended to cover the entire system on September 10. It differs from the methods in effect on some of the other lines in that the road has been successful in getting the shippers to refrain from offering their freight except on the days on which the cars are forwarded and in this way avoiding holding cars under partial load until the day for their departure.

This co-operation on the part of the shippers was the result of the care with which the detailed sailing schedules were prepared. Before definite "shipping days" were announced, the assistant to the general manager went directly to the wholesale and retail merchants shipping over the line, explaining the proposed plan to them in detail and asking them regarding their actual requirements. In some instances merchants were located from five to seven miles from the railroad, but they, as well as those located immediately on the line, were visited. Conferences in some communities were completed in an hour, while others required several days.

Some merchants stated that it was not necessary for them to receive merchandise more than once a week, but that they preferred to get it on Friday as they desired to have the goods on their shelves for Saturday, and they did not have time that day to haul them from the station to their stores. Others, and they were in the majority, thought that shipments twice a week would take care of their requirements in a reasonable manner.

After visiting all of the shippers along the line, it was found that it was possible to reduce the local train service to one-half and at the same time provide the schedules which were desired. This made it possible to transfer 8 to 10 locomotives, cabooses and crews to through service and resulted in a number of important economies in addition to the immediate savings in wages and wear and tear on equipment.

This plan has also enabled the loading of cars to be increased materially. In August of this year over 3,770 tons more merchandise were handled on the road than during the same month of the year previous, while 2,530 less cars were required to haul it than would have been necessary with the average loading secured in August, 1916. At East Salamanca, where 2,893 tons more freight were loaded in 624 less cars with an increase in the average load of 6,925 lb. in through cars and 725 lb. for peddler cars, the average load in through cars this year being 34,275 lb. and in the peddler cars 13,450 lb. At Punxsutawney the average load for through cars was raised from 6,695 lb. to 15,724 lb., and in the peddler cars from 5,867 lb. to 11,622 lb. with a saving of 528 cars. Similar improvement was made at other stations along the line. It is stated that this road now leads the country in intensive loading, with a decrease of 42 per cent in the number of cars and an increase in tonnage of 91.7 per cent. We are indebted for this information to J. W. James, assistant to the general manager, who has been in charge of this work.

The Brown System of Discipline—Prize Article

Intimate Studies Reported by an Employee of Fifteen Years' Experience on Both Large and Small Roads

By Sidney J. Keeler

Chief Clerk to Superintendent, Peoria & Pekin Union Railway, Peoria, Illinois.*

IN my varied experience on the road and in the yard, and as chief clerk to the superintendent, I have served on roads where both systems of discipline obtained, and on one road where the practice of assessing actual suspensions was changed and the Brown system substituted while I was there; and I unhesitatingly say the Brown system has proved far superior to that of causing employees to serve time.

First, and above all, it promotes a spirit of loyalty. It is a system which can be applied at any time, and it applies to the little things as well as the larger ones. The enforcement of actual suspension cripples the railroad. At times it is utterly impossible to dispense with the services of an employee for any length of time without detriment to the service. This is especially so under the recent stringent laws, limiting the hours of service, length of trains, etc., at a time when the supply of experienced men is necessarily limited. Quite often the suspension of one man would necessitate tying up an entire crew, or at best would handicap a district or yard. In such a situation the officer must either overlook a serious infraction of the rules and permit it to pass unnoticed, or must limit the suspension to a minimum not in keeping with the offense.

That the employees, as well as the officers, understand this is illustrated by the reply of a switchman on one of our larger railroads. Upon meeting him recently I inquired what system of discipline they were using now on the road where he was working. The answer was: "They haven't any system. They lay a man off for anything, when they have lots of men; but now they are short of men and a fellow can do anything, and hear nothing of it." The railroad referred to was among the pioneers in the use of the Brown system; but under new management it had reverted to the actual suspension system. It is noteworthy that that same road has had several serious collisions of late, to passenger as well as freight trains; cars left standing foul of main tracks, misplaced switches, short flagging, and many other evidences of carelessness and neglect. These mishaps do not occur where everything of the kind is properly dealt with when it comes to the attention of the officer. Without doubt the men in charge felt that such cases of seeming slight importance were not of sufficient consequence to cause a man to lose a day's time, or possibly a round trip, and at the same time cripple the service, at a time when the guilty ones could not be spared.

I daresay there is not one superintendent or trainmaster who has worked under the actual suspension system who cannot recall numerous cases in which employees should have been suspended for infractions of the rules, but which were permitted to pass unnoticed because to have suspended the man would have compelled the company to replace him with one not nearly so good. By application of the Brown system such cases could have been properly dealt with at the time they occurred.

Importance of Uninterrupted Team Work

The value of the record system of discipline is often noticed where it makes it possible to keep a crew intact. It weakens a crew to have to replace any member by a younger or extra man, be it an engine crew, a train crew, or a yard crew. Regardless of the question of experience, the extra man is not entirely familiar with the methods of the different crews and they are not acquainted with his work; and until such time as they do become thoroughly organized, the crew is weakened, and the company suffers in proportion. A check of accidents occurring on one railroad during the past four years shows that 78 per cent of those which were avoidable were chargeable to men who had been in the service less than six months, and were filling extra positions. I believe this to be a fair average, and one which will be found to exist on the majority of railroads, this especially as the road mentioned always hired experienced men where it was practicable to do so.

Not only are the services of the employee lost to the company during the period of actual suspension, but I have known old and faithful employees to become so dissatisfied through continually serving time for minor infractions of the rules where a good intention went wrong, or where a conductor, foreman or responsible head has been compelled to serve time through the carelessness or neglect of some subordinate—in many cases an extra man with whose capabilities he was not entirely familiar—that they sought employment elsewhere, under the Brown system, where they could be assured of uninterrupted service. In other cases, I have known where men found it necessary to seek employment in the service of other roads while "serving time," in order to keep their families provided with the necessities of life. These became attached to their new positions and valuable men were lost to the company.

Discipline and Domestic Relations

Consider, also, the man's family. Most men of the caliber we desire to have for our employees are paying for a home, or have planned their financial affairs ahead, so that the loss of time by suspension interferes with their plans, and results in dissatisfaction on that account. Furthermore, the railroad man of to-day realizes that he must take a vacation or rest periodically in order to retain his health, and he figures his financial affairs accordingly; so that he can be absent at the time when business is slack and he can be spared from the service. He is able to do this under the Brown system, for he knows that so long as he remains in the service of the company he is privileged to work steadily; whereas, under the actual suspension system, if he is compelled to serve time when he does not need the rest, or when for other reasons he cannot leave his place of residence; when slack business rolls around and he could be spared, and he would like to take a rest, he cannot afford to do so, because he must work to make up for the time he has lost. The company suffers by the failure of a wornout machine, not physically fit to give one hundred per cent service.

Reasonableness of the Brown System

The brotherhoods have now reached the point where they are sufficiently strong to protect their members and insist upon their receiving the proper consideration at the hands of officers. The general run of railroad officers are capable and fair, but I have known cases where they were so unreasonable that the employees were compelled to serve actual

*Mr. Keeler has served on the Missouri Pacific, the Rock Island, the Union Pacific and other roads, mostly in clerical positions; but he has had some little experience in train work. His father has been in the train service all of his life and has worked under both Brown's discipline and the old fashioned kind.—Editor.

suspension where they were not at fault; and through their organizations, the employing officers have been compelled to reinstate the men and reimburse them for the time lost. How much easier it would have been under the Brown system; the officer could have reversed his decision when new facts developed, and he found the discipline was unjust, and the cancellation of the demerits would have closed the case.

It is contended by some that the only way to reach a man is through his pocketbook. But the number of these is decreasing and the time when that was the accepted rule in the railroad service is history; the successful officer to-day is the one who deals kindly yet firmly with his men, one who will reason with them, and is broad enough to see the employee's side as well as the company's. Employees will go much further to serve the interests of the company out of regard for the individual officer than they will out of fear of discipline.

Others say that an employee does not mind receiving demerits. My observation is that this statement is not borne out by the facts. There is no man so devoid of manhood that there is not some spark of good in him which can be brought to the surface by proper consideration; while many good men have had their future ruined through misuse of the power intrusted to a railroad officer. The men do take an interest in their personal record under the Brown system; anyone of contrary opinion has only to assess demerits wrongfully and see how quickly the employee will call at the office to present his side of the case and get justice. Moreover, the men make a practice of calling at the office at frequent intervals to look over their account and see how they stand with the company; and they have benefited by their wrongs and worked just as hard to atone for their wrongs, where the discipline was by record, as though they were compelled to serve the time. This is not merely a supposition on my part; it is information gained from conversation with railway officers who have risen from the ranks. They will tell you that while serving in the ranks they have tried as hard to retain a clear record under the Brown system as they did to avoid suspension. The general run of employees take as much pride in an untarnished record as any average intelligent man would in a duty well performed.

Uniform Administration Desirable

At the present time there appears to be no standard measure of discipline on the railroads of this country. Some consider one demerit equal to thirty days' suspension, with a limit of ten demerits resulting in dismissal. I believe the better plan is where demerits are placed in multiples of five, with a limit of ninety or one hundred resulting in dismissal; not more than thirty demerits being assessed for any offense, and a clear record for stated periods canceling a specified number of demerits. Under this arrangement, any man dismissed from the service and later reinstated would return with sixty demerits still standing against his record. The accumulation of ninety (or one hundred) demerits should not be limited to any definite space of time. I have never known a really desirable employee to be dropped from the service through accumulation of demerits so long as demerits are canceled by clear records for stated periods. The use of the reprimand is an important element; to be used where the offense is not of sufficient consequence to require demerits, but which at the same time should not be permitted to pass unnoticed.

Some companies use the actual suspension system in conjunction with the record system. In my opinion it is preferable to use one system; else the discipline cannot be uniform.

So universal has the practice become of considering a demerit equal to a day's pay that the term "days record suspension" is considered preferable to "demerits."

Many of the larger roads compile periodical statements showing the actual amount of money saved employees through use of the Brown system, which figures are taken from the payroll records showing the pay the employee received during the time he would have been serving actual suspension were the other system in use. It is needless to say that the saving represents a considerable amount of money to the employees and their families. But I dare say it would represent even a greater amount to the company were it possible to make a comparison with the results which would have been attained under the system of causing employees to serve the time. Unfortunately such a comparison is not possible; if it were possible to place a monetary value on loyalty and efficiency, and on the benefits of an uninterrupted organization, the actual suspension system would be a thing of the past on every railroad in America.

Amenities Must Not Be Forgotten

Some railroads do not make a practice of recognizing meritorious acts, while others recognize them by letter, but make no favorable entry on the man's record. If we are going to keep a record of an employee, it is only just that we record and give him credit for his good acts as well as the bad. It is contended that the men are simply obeying the rules when they stop to extinguish a fire, remove a dangerous object from the track, make light repairs to a car of important freight which will permit it to go forward without delay, notice a dangerous condition of a car in a train of another crew or company, or perform many acts of seeming little importance; but I know that the men place greater than a monetary value on letters of recognition of a meritorious act. It should be made incumbent on employees to report any creditable act of themselves or their fellow-men the same as they are required to report accidents or infractions of the rules. It is a very easy matter for an employee to overlook material left carelessly beside tracks jeopardizing the lives of employees, or a fire burning in or near company property which might cause much greater damage if not promptly controlled; but by letting the men know that such acts are noted and appreciated there will be stimulated an alert disposition to watch out and to promptly remedy or report dangerous conditions. The results attained are far in excess of the effort required to write a letter thanking the man for the thoughtfulness and interest shown.

Regular monthly or semi-monthly bulletins, omitting names, but showing the credits and the record suspensions, are an important feature. Bulletins should go sufficiently into detail to show employees wherein the guilty ones err, or what rules were violated; and in the case of credits should show wherein some thoughtful act saved the possibility of injury to others, or damage to property. On the road I mentioned where the actual suspension system was replaced by the Brown system, it was a noticeable fact that the first educational bulletin took several sheets to record the demerits, with but few cases worthy of creditable mention; but there was a noticeable improvement from the first, and in a short time one sheet would cover the demerits, with the credits far in excess. There was a distinct change in the men; they took pride in their records and they worked together and perfected an organization which reached the highest point of efficiency. I can think of no stronger argument in favor of the Brown system than the change which was effected on that road; it was a revival of intelligent interest and loyalty that would convince the most skeptical.

Many of our railroads have advanced in their power, their roadbed, and their rolling stock, but have stood still in their organization and discipline. The character of the employees has advanced; the men of to-day cannot be compared to those of twenty or thirty years ago, who entered the railroad service because they had the strength of body, while they lacked the education to enable them to hold higher positions. There is no class of employees that has improved so rapidly as the railroad man. The railroad employee of

today must be a man of intellect. Our system of discipline must keep up with the times. I know of no class or occupation which cannot be properly reached through the use of the Brown system; it will cover every department of the service as well as the trains, yards and stations, and I believe it should be universal.

It seems to me that any railroad officer who has not become fully convinced of the wisdom of abolishing suspensions needs only to work under both systems and see both sides of the question. He would then appreciate the value of an organization composed of loyal and faithful employees who are ready at all times to go out and "do their bit" for the railroad company because they know their employers appreciate their desire to do right at all times. He would know how the men value a system which does not take the bread out of the mouths of their wives and children because of some slight fault of omission or commission. As the merits of the system become better known and the lessons of experience multiply, it must be that the wisdom of abolishing suspensions will come to be acknowledged by railroad officers everywhere.

CONVENTION OF RAILWAY TELEGRAPH SUPERINTENDENTS

A special meeting of the Association of Railway Telegraph Superintendents was held in the Hotel La Salle, Chicago, on Thursday, November 22. The 1917 annual convention, which was to have been held in Washington, D. C., September 18 to 21, inclusive, was postponed on account of the war. The meeting was called to order at 9:30 a. m. by M. H. Clapp, superintendent of telegraph of the Northern Pacific, St. Paul, Minn., president of the association, with 59 members and 19 guests in attendance.

In a short opening address Mr. Clapp stated that the discussions at this special meeting would be on war topics and added that the annual convention would probably be held next year but the place of meeting would be decided later. The first speaker was Colonel Leonard D. Wildman, chief signal officer, central district, signal corps, U. S. army, who described the growth of that branch of the service in the present war and told of the methods used for training men to be telegraph and radio operators in the several schools recently started by the government in different parts of the country. In view of the urgent need for men, he expressed his approval of the recent suggestions that the roads employ women operators and also use the telephone wherever possible for the transmission of commercial and railway messages, thereby releasing experienced telegraph operators for government service.

A service flag with seven stars representing seven absent members hung over the speakers' platform. The following eight members are in government service, one having entered since the flag was ordered: C. D. Beard (P. & L. E.), F. E. Camp (C. P. R.), Claude Mitchel (G. C. L.), F. T. Caldwell (G. T. P.), J. H. McGlogan (G. N.), D. O. Van Der Vort (M. C.), I. D. Hoagh (E. P. & S. W.), P. H. Chapman (N. E. S. Co.). A motion was unanimously carried that the names of these eight members, and all others that may join the colors, be placed on the Association's Roll of Honor and all dues be annulled for the duration of the war.

The first report was read by J. F. Caskey (L. V.), chairman of the Membership Committee, who reported that there were 131 active, 77 associate and 45 honorary members, a total of 253.

Though the report of the subcommittee of Committee No. 1 on Wire Crossings was not presented in full by G. A. Cellar (P. L. W.), chairman, he outlined its plan for future investigation which is considered necessary before presenting the report for final action. The acting chairman of a subcommittee of Committee No. 1 on Transposition, G. A. Dornberg (P. L. W.) recommended the adoption of the Western Union specifications. No action was taken.

R. F. Finley (N. Y. C.), chairman of special Committee No. 2 on Construction and Maintenance of Inside Plant, discussed the gathering of specifications and additional data which the committee had been working on but stated that his report was not complete. E. A. Chenery (Mo. Pac.), chairman of special committee No. 3, Wire Chief's Equipment and Routine, stated that as the report to be made by his committee depended directly in some cases upon that of Committee No. 2, it was necessary for them to work together and therefore report together.

Committee No. 5 on Protection Against Lightning and High Tension Circuits, of which J. F. Caskey (L. V.) is chairman, reported having held five meetings since the last convention. Mr. Caskey discussed briefly some of the recommendations the committee would submit at the next meeting, among which was the advisability of using for the present an air gap and a vacuum arrester in multiple.

The report of Committee No. 6, on Telephone and Telegraph Development, was made by E. C. Keenan (N. Y. C.), chairman. Mr. Keenan said that only six replies had been received in answer to a circular letter, explaining the purpose and duties of this committee and asking for suggestions and information concerning new devices and equipment, which he had sent out to all members of the Association. Four new devices were recommended.

Schools for Telegraphy

Committee No. 7, on Railroad Message Traffic, F. T. Wilbur (I. C.) chairman, had been assigned the special duty of considering the shortage of, and plans for, schools to teach telegraph operators. As this subject is of vital importance to practically all the railroads in the country, a general discussion was entered into. Mr. Keenan (N. Y. C.) stated that the New York Central has operated a school at Albany, N. Y., for a number of years and has recently opened telegraph schools at Utica, N. Y., and Rochester, for the instruction of students in telegraphy and in the operation of block signals. He has more applicants than he is able to enroll in either of these schools. An entrance fee of $2 is charged and thereafter a monthly tuition fee of $1. The money is refunded to the students who complete the course and who enter the service of the railroad company. The majority of students have been girls and on completing the course he finds them willing to go to way stations. Mr. Finley (N. Y. C.) stated that there were 12 women operators on duty on the Lines West and that he had received no complaints relative to their employment from the Order of Railroad Telegraphers. A point was then brought up by some of the members as to laws regarding the working of women more than a certain numbers of hours. One member emphasized the desirability of training clerks to be operators as they were familiar with the railroad operating routine and could grasp the work more quickly than a person who had had no experience along those lines.

G. M. Dodge of the Dodge Institute gave a talk outlining the purposes and course of study at his school. This was followed by a general discussion in which H. D. Teed (St. L.-S. F.) stated that employees of the Frisco in the various offices who expressed a willingness to learn telegraphy were excused from their regular duties for 1½ hours each day to receive instruction and were expected in return to devote the same length of time at the school in the evening. Practically all of the students who are receiving instruction in this way, about 100, are applying themselves very earnestly. After completing this part of the course, the prospective operators are given experience in the handling of tickets which proves of much assistance to them after being assigned to an office, and it is also found that an agent is usually glad to have an operator in the office

who has had this kind of experience. The personal interests of the girl operator, who has been assigned to an office, such as the handling of her baggage, assisting her in locating comfortable quarters, etc., are looked after by some one assigned to this work by the telegraph superintendent and who remains with her in the new office for two or three days, when possible, to see that conditions are made agreeable.

Mr. Wilbur offered suggestions relative to the conducting of schools, offering a bonus to employees who will teach a student telegraphy who afterwards accepts employment on the road; and soliciting the co-operation of the Order of Railway Telegraphers.

Among the members present, 8 reported that they are operating schools, 12 have no school and 4 are contemplating the opening of schools. The members operating schools reported as follows: N. E. Smith (N. Y., N. H. & H.), 100 students in two schools; E. C. Keenan (N. Y. C.), 194 students in seven schools; F. T. Wilbur, (I. C.), ten students in one school; Stanley Rhoads (C., C., C. & St. L.), 15 students in one school; W. H. Hall (M. K. & T.), 50 students; J. J. Rounds (D. & H.), 42 students in one school; H. D. Teed (St. L.-S. F.), 100 students.

A general summary of the discussion on schools showed that with a few exceptions no difficulty was being experienced in enrolling in the larger cities all the student operators that the school could train but the same success had not been met in the smaller towns, especially in the west.

Conserving Telegraph and Telephone Facilities

A special committee consisting of Messrs. Cellar, Chenery and Keenan had been appointed by the president to consider and report on the conservation of telegraphing and telephoning in connection with both commercial and railroad wires. The committee reported that it had communicated with the entire membership of the Association and found that the service was being threatened with demoralization due to the enlistment of telegraphers in the army and navy and added that, with the calling of another draft quota and with the increased requirements of the railroads on account of the extraordinary government and commercial transportation, the condition would be made more acute.

It is estimated that about 50 per cent of the burden of tracing freight by telegraph, which is now imposed upon the railroads, is unnecessary and further, this use of the wires is rapidly increasing. Also, a large number of such messages are unnecessary and by concerted action could be abolished or largely curtailed. Also a large number of the messages contain superfluous words. It was further stated that a great deal of the information now being communicated in telegraph messages could be sent either by letter or by traingram. The railway companies' telephone facilities are being greatly abused on account of conversations that are unnecessary or unnecessarily long, or of a social nature. The committee recommended the following in order to save in the use of telegraph and telephone facilities and to expedite necessary telegraphic and telephonic traffic:

(a) That concerted action be taken by the different railroads to greatly curtail, if not altogether abolish, telegraphic tracing of freight at the request of the consignor or consignee. In the opinion of the commmittee this concerted action can only be secured through the American Railway Association. That like action be taken in connection with any other system of telegraphic reports that are in use at present on the different railroads and are not necessary for efficient operation.

(b) That steps should be taken to eliminate all superfluous words from messages.

(c) That train or United States mail shall be used in forwarding all communications where it is not absolutely necessary to communicate the information by wire. The carrying out of this recommendation contemplates special surveillance of communications to be forwarded late in the afternoons, or on Saturday afternoons and Sundays, or holidays, the idea being that no communication shall be sent by telegraph that can be forwarded by mail and still serve its purpose. It is expected that the train mail service can be made more reliable and expeditious by the use of special pouches for traingrams, delivered direct to the train baggageman just before the train is due to depart, the train baggageman to deliver the pouches directly to a messenger who will meet the train at the destination point.

(d) That adequate code and symbol systems and other methods for cutting down the number of words actually used in messages be generally adopted by the different railroads.

(e) That surveillance of the use of telephone facilities, both railroad and commercial, be instituted with the view of doing away with the present abuse of these important facilities.

(f) That an adequate and effective system of censoring telegraphic and telephonic communications be adopted by all the railroads. In order to carry out this recommendation, the following plan is recommended:

1. The issuing of special instructions over the signature of the highest officer of each railroad, appointing the superintendent of telegraph, or any other designated officer as official censor of all telegraphic messages of the officers and employees of the railroad.

2. The formulating and issuing by the official censor of the instructions necessary to put into effect and carry out the plans and recommendations contained in the preceding paragraph.

3. In view of the fact that for many years it has been the practice to scrutinize the telegraph office files and call attention to the unnecessary and improperly worded telegrams after they have been transmitted, and that this practice has been demonstrated to be not entirely adequate in the present emergency, it is recognized that it be made a fundamental of the censorship systems which may be adopted by individual railroads that telegrams must be censored *before they are sent* by a regularly appointed and responsible person in each department or departmental office. This person should receive detailed instructions from the official censor and be held for all violations occurring under his jurisdiction, which should be clearly defined.

(g) That the construction of additional telephone circuits for despatching trains and for local message work should not be stopped or deferred on account of the war, but, on the contrary, should be prosecuted with greater vigor, to the end that as the shortage of telegraphers becomes more acute, they can be replaced without the delay incident to the long training required to master the art of telegraphy.

To this report was added a resolution recommending its adoption and the sending of copies at once to each member of the association and to the president or general manager of each railroad in the United States and Canada, and further, its submission later to the American Railway Association.

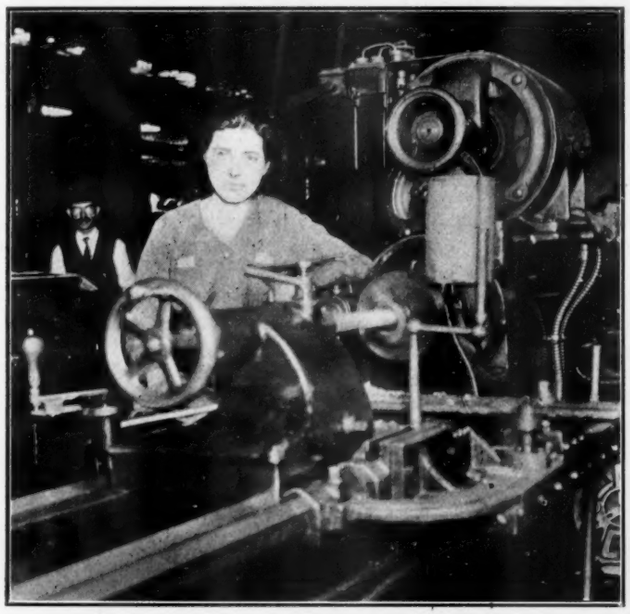
The president then introduced J. E. Dempsey, who spoke on the adoption of a code by railroads to be used for all telegraphic communications. The code which Mr. Dempsey compiled has been adopted by the Committee on National Defense and is used in handling government messages now. Mr. Dempsey is preparing a train sheet, which he will submit to the Committee on National Defense, whereby the movement of all troop and supply trains can be followed and recorded. Their routing and progress can be handled over the wire in one word.

In the absence of E. T. Griffith (Erie), chairman of Committee No. 8 on Commercial Telegraph Service, the report was read by F. L. Van Akin, Jr. (N. Y. C.).

The Employment of Women in Railroad Shops

Roads Relieve Serious Labor Shortage by Hiring Women; Notes on the Results at Some of the Shops

THE depletion of the forces in the railroad shops of this country, which during the past year has been very serious, seems now to have reached a point where any further reduction will inevitably result in a loss of efficiency in that department of the railroad organization. It was thought by many that after the men who were chosen for the national army were called there would be few changes in the force, but this has not been the case. The railway regiments now being formed for the purpose of rehabilitating the Trans-Siberian railroad will of course take their quota from



An Expert Machine Operator Who Was Formerly a Schoolteacher

the railroad shops, and the increasing requirements of other branches of the government service will result in the withdrawal of considerable numbers. Of greater consequence, however, is the readjustment of labor, which will proceed slowly for a considerable period. Many of the war industries have lost men through the selective draft, and a part of the positions thus made vacant will surely be filled from the ranks of the railroad shopmen, some of whom place the higher wages to be secured elsewhere above the permanence of employment which the railroads provide.

It is quite unnecessary to state that no curtailing of the output of the railroad shops can be permitted at this time. In spite of all that the railroads can do cars and locomotives will deteriorate faster than they can be repaired. Daniel Willard, in his address, "How Railway Efficiency Helps Win the War"* made it clear that the efficiency of the railroads will play an important part in winning the struggle. To keep the equipment of the railroads of this country in condition has now become a patriotic duty.

How is the labor situation to be met? In spite of the numerous wage increases which the roads have put into effect since the beginning of the war, it is impossible for them to compete in the labor market with plants manufacturing war supplies. Even if it were possible to put wages on a plane that would draw men from other industries, many would be taken from shops whose work is essential at this time, and the nation's productivity would not be increased by the shifting of workers. Labor-saving machinery might help the situation in some cases, but it is almost impossible to secure tools at the present time owing to the unprecedented demand. The logical way out of the difficulty seems to be to employ women in greater numbers for doing work in the shops.

Many roads have introduced women workers in the mechanical department, among them being the Baltimore & Ohio, the Erie, the New York Central lines, the Minneapolis, St. Paul & Sault Ste. Marie, the Chicago, Burlington & Quincy, the Northern Pacific, the Union Pacific, the Oregon Short Line and the Chicago, Milwaukee & St. Paul. On most of these roads the employment of women has passed the experimental stage and sufficient data are now available to make it possible to judge the value of women in shop work. Some observations made in shops where women have been employed for some time will show the progress that has been made in this direction.

The difficulties encountered in introducing women work-

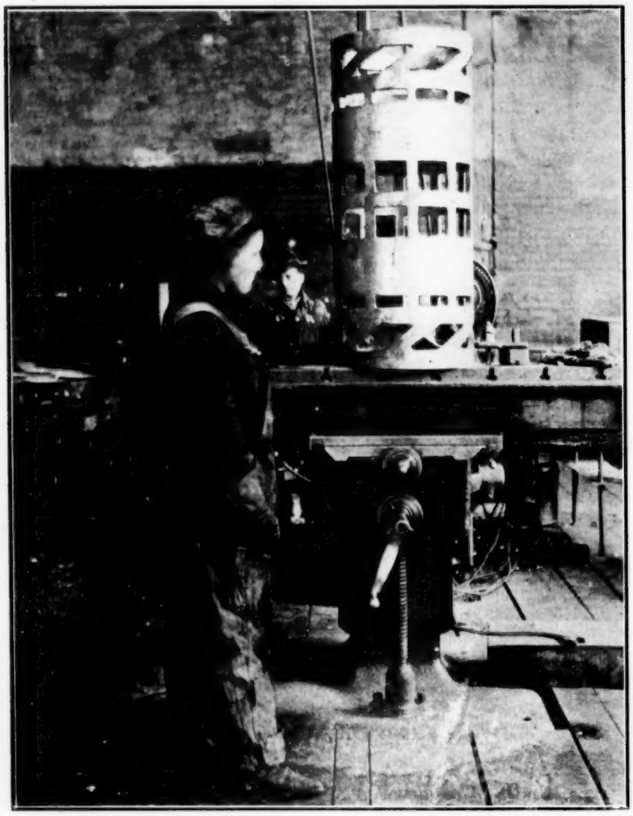
Women Employees Grinding Tools, Havelock Shops, C. B. & Q.

ers in the shops have not proved serious. Rooms in which women can change from street to shop clothes, rest rooms and toilet facilities are, however, essential. Where women are employed around shops, skirts are in most cases a hindrance and sometimes a source of danger. It is, as a rule, unnecessary to urge the adoption of more suitable attire, the women workers being quite willing to don loose overalls. Women who work around power-driven machines should wear caps to preclude the possibility of injury by loose strands of hair catching in shafting or belting. In many states the hours of labor of women workers are limited by statute and special

*See *Railway Age Gazette*, August 17, 1917, page 274.

reports are sometimes required, but these are of such a character as to require but little clerical work.

On many railroads women have heretofore been excluded from the shops to such an extent that it is an easy matter to find positions for which women are quite as well fitted, now filled by men. For example, there are a great many male clerks employed in places where women after a short period of training could handle the work with little difficulty. At the Havelock, Neb., shops of the Chicago, Burlington & Quincy a woman is employed in distributing blueprints with entire success, although the work requires some knowledge of locomotive parts in addition to an understanding of the filing system. At Havelock women are also doing work which requires considerable skill, such as operating lathes, milling machines, gear cutters and shapers. Their work has been found highly satisfactory, and though a trifle slower

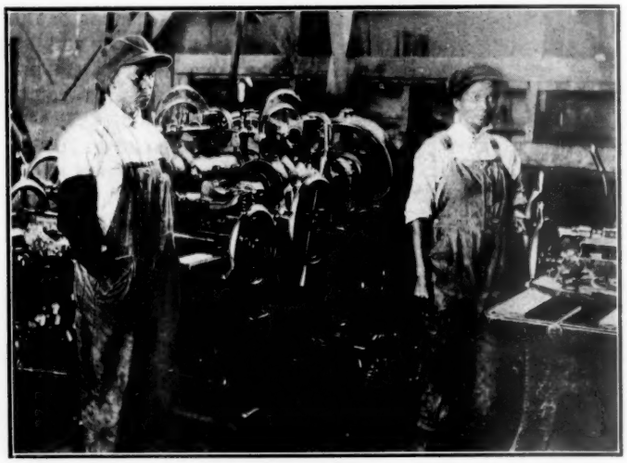


A Woman Operator Milling the Ports in a Valve Chamber Bushing, Pocatello Shops, Oregon Short Line

than men, they seldom make mistakes and do very accurate work.

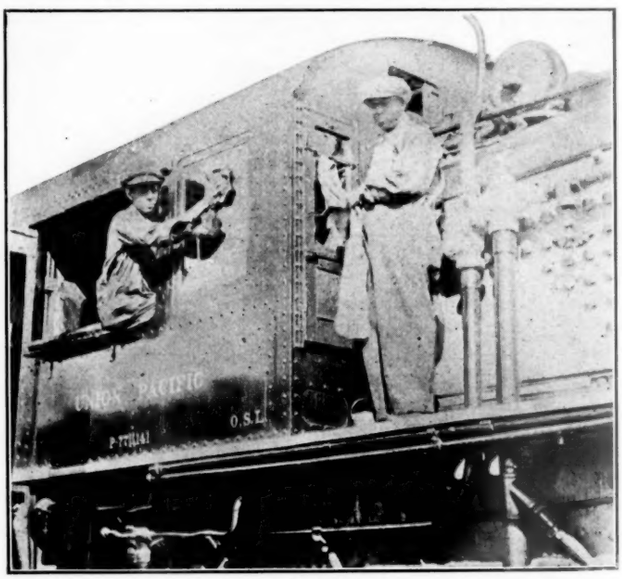
An instance which shows the natural adaptability for machine work that some women display will serve to indicate the possibilities for women in railroad shop work. A young woman who, after graduating from a university, had been teaching the sciences in a Nebraska high-school, secured a position in the Havelock shops of the C., B. & Q., thinking the experience she could gain during the summer would be of value to her in teaching. She became so proficient that she was assigned to lathe work in the tool room and the work proved so fascinating that she resigned from her teaching position. Although the lady in question had intended to remain in the shops indefinitely, her stay there was limited to three months. At the end of that time a vacancy occurred in the general offices of the mechanical department, for which she was particularly qualified by reason of her shop experience, and she is now holding a responsible position in the office of the general superintendent of motive power.

At the Pocatello, Idaho, shops of the Oregon Short Line women are now handling a large part of the work in the machine shop and car department on which male help was previously used. Women are probably employed to a greater



Colored Women Working on Bolt Cutters at Pocatello Prove as Efficient as Men

extent in this shop than at any other place in this country. The effort to relieve the labor situation in the shops in this way has been so successful that if it were possible to get more women for shop work, it is probable that they would be employed in even greater numbers. No special training was provided for the women workers except such as is usually given to apprentices. The instructor who directed the work



Women at the Pocatello Roundhouse, Oregon Short Line, Cleaning Locomotive Cabs

of the apprentices also instructed the women. All the women at Pocatello are under the supervision of men, but at Salt Lake on the same road, where a great many women are employed as coach cleaners, a woman is in charge, who reports to the foreman of the coach department.

In the machine shop women are employed in the operation of engine lathes, boring mills, milling machines, planers, brass lathes, drill presses, cutting-off machines and nut tap-

ping machines. Most of the women are kept on specialized work. Those who show special adaptability, however, are trained on machines of all kinds, and some are capable of running almost any machine in the shop. It is the opinion of those in charge that a considerable proportion of the women workers could readily be developed into skilled machine operators.

The reclaiming and repairing of cab cocks, globe valves, boiler checks and miscellaneous valves is now done largely by women. In the tin shop they are repairing lanterns, oil cans, etc., as well as doing general tinsmith work. A woman is employed to run the motor-driven transfer table. Staybolts are finished in the boiler shop by two women, who are doing as good work as the men who formerly ran the machines. All parts of locomotives are now painted by women.

In the coach shop women are doing the upholstering work, cleaning coaches and preparing them for painting. Two colored women work almost entirely at painting and varnishing coach sash. While men are still employed on engine wiping, the cabs and the cab windows are cleaned by colored women.

It has been found that the output of the women workers employed at Pocatello compares very favorably with the output of male help and with efficient supervision the quality of the work is equally good.

At other shops women are employed on various classes of work which have not been mentioned, acting as helpers for machinists, blacksmiths and car repairers, operating steam hammers, building grain doors, packing journal boxes, reclaiming waste, sorting scrap and cleaning yards and shops.

At least one road has employed women as tracers in the drafting room, which suggests a method for relieving to some extent the serious shortage of draftsmen. In general, the experience which the railroads have had with the employment of women in the shops seems to indicate that it offers in many cases the only satisfactory solution of the labor problem of the mechanical department.

WASHINGTON CORRESPONDENCE

WASHINGTON, D. C., November 27, 1917.

BROTHERHOOD CHIEFS CONFER WITH PRESIDENT

The situation created by the new demands of the brotherhoods of train service employees for higher wages was not appreciably clarified as the result of the conference between the executives of the four brotherhoods and President Wilson on November 22, at least in so far as the results of the conference have been made public in statements issued by the brotherhoods and by the White House. The President confirmed the brotherhoods' statement and said he had received the impression that they were willing "in case any critical situation or controversy should arise, to consider any proposed solution in a spirit of accommodation and a patriotic purpose," while the statement itself declared that they "would be more than willing to discuss and consider any solution of the difficulty which presented itself, doing so in the spirit of patriotic co-operation."

While these expressions contain no threat of an attempt to interrupt transportation service and offer an opportunity for the President to propose a plan of settlement, they contain no promise that the threat will not be used later, and there is a marked difference between the attitude expressed by the brotherhoods and that of the Railroads' War Board. Speaking for the railroads, Chairman Fairfax Harrison had placed the interests of the railroads "unreservedly in the hands of the President for protection, and for disposition as he may determine is necessary in the public interest."

The brotherhoods merely told the President they wanted more money and would consider any peaceable method that might be proposed for giving it to them, and, at least so far as the statements indicate, they have not committed themselves to anything more definite.

The two-hour conference with the President was attended by W. G. Lee, president of the Brotherhood of Railroad Trainmen; Warren S. Stone, grand chief of the Brotherhood of Locomotive Engineers; A. B. Garretson, president of the Order of Railway Conductors; W. S. Carter, president of the Brotherhood of Locomotive Firemen and Enginemen, and also by W. L. Chambers and Judge Martin A. Knapp of the Board of Mediation and Conciliation.

Afterward Judge Chambers told newspaper men that matters looked "favorable." The brotherhoods gave out a signed statement as follows:

"The men who comprise the railway brotherhoods are thorough Americans, therefore they believe in American standards of living, and in consequence of this realize that standards of pay that were established in 1912 and 1913 are inadequate to meet present-day prices for commodities, and for that reason are demanding an increase in present rates that will meet half at least of the increase in cost of those things which they are compelled to purchase.

"They want to co-operate in every way that is at all possible in the successful prosecution of the war, and they fully realize that the most serious thing that could occur during the conduct of war would be any interruption of railway transportation, and they, in common with the great body of the people, are determined to do everything within the bounds of reason to avoid such interruption.

"Being fully conversant with their attitude and desire in this matter, we are in a position to give the assurance that, if a situation should arise which would threaten the interruption of transportation, the men whom we represent would be more than willing to discuss and consider any solution of the difficulty which presented itself, doing so in the spirit of patriotic co-operation, and would undoubtedly co-operate with the Government to the utmost extent in arriving at a just, equitable, as well as patriotic conclusion."

This was followed by a statement from the President authorizing the representatives of the press to say, "that he had got from the interview exactly the impression conveyed by the statement of the heads of the brotherhoods, namely, that the men whom they represented were not inclined to contend for anything which they did not deem necessary to their own maintenance and the maintenance of their families, and that they would be willing in case any critical situation of controversy should arise to consider any proposed solution in a spirit of accommodation and of patriotic purpose."

The rather vague character of these utterances may possibly be ascribed to the fact that the brotherhoods have not yet completely formulated their demands and it is, therefore, somewhat uncertain how great a problem is involved as to the ability of the railroads to pay the higher wages.

The fact remains that the brotherhoods are insistent that the wages of their members shall be increased and that they do not intend to let go of the club they possess in their ability to call a strike, which would be disastrous at such a time. Apparently also they decline to recognize the effect of the Adamson law in increasing their wages for the purpose of persuading them not to strike last year.

Thus far only the conducters and trainmen have formulated their demands. These are now being submitted to a referendum vote of the membership. Demands from the engineers and firemen, if they have been decided upon, have not yet been announced.

The circumstances attending the passage of the Adamson "eight-hour" law were recalled, on the same day that the brotherhood leaders saw the President, by a brief filed in the Supreme Court by the government supporting a decision of a federal court in Arkansas that the Adamson act applied to all railroads, regardless of whether they had a wage dispute pending at the time the law was enacted. The Fort

Smith & Western Railway Company had appealed from the decision.

"Congress did not undertake to investigate the conditions surrounding different roads," said the Government's brief. "It merely faced the fact that the commerce of the country was about to be tied up and endeavored to adopt a general measure to give relief. If it had known, as it probably did not, that there were some roads whose men would not join in the strike, it doubtless would still have passed an act applying to all alike. But slight knowledge of human nature is necessary to make it apparent that if relief had been granted to some and withheld from others, the result would have been new dissatisfaction which would speedily have brought about another emergency of the same kind to be dealt with."

Commission Reduces Accounting Requirements

As a measure of war time economy the Interstate Commerce Commission has issued an order providing that the observance of the requirements of paragraphs 2 and 3 of its order of June 15, 1915, prescribing the rules governing the separation of operating expenses between freight service and passenger service on large steam railways may be suspended until otherwise ordered. The railroads, through the accounting officers' association, recently proposed both to the Interstate Commerce Commission and to the state commissioners a curtailment of the accounting requirements during the war, in order to conserve clerical forces, and while the whole program has not yet been acted upon, the commission has reduced many of its usual requirements of this kind.

Willard Resigns from War Board

Daniel Willard, president of the Baltimore & Ohio, has resigned as ex-officio member of the Railroads' War Board because of his appointment as chairman of the War Industries Board of the Council of National Defense. As chairman of the Advisory Commission of the Council of National Defense and chairman of its committee on transportation and communication Mr. Willard called the meeting of railway executives held at Washington in April which resulted in the organization of the Railroads' War Board and the agreement to operate the railroads of the country as a national system under its direction.

State Commissions Appoint Washington Representative

Charles E. Elmquist, for several years a member of the Minnesota Railroad and Warehouse Commission, has been appointed solicitor for the valuation committee of the National Association of Railway & Utilities Commissioners, with office at Washington, D. C., succeeding Clyde B. Aitchison, who was recently appointed a member of the Interstate Commerce Commission. Mr. Elmquist has also been appointed representative at Washington of the Special War Committee of the association and has been in conference with the Interstate Commerce Commission and the Railroads' War Board to express the desire of the state commissioners to co-operate in the work of winning the war and to establish a co-operative working basis.

Newlands Committee to Resume Hearings

The Congressional Joint Committee on Interstate Commerce, of which Senator Newlands is chairman, will resume hearings in connection with its general inquiry into questions of railway regulation and control, at Washington, on December 4. It is probable that the first testimony will be that of officers of the transcontinental lines regarding the transcontinental rate situation as a reply to some of the testimony presented by state commissioners and shippers of the intermountain territory at the recent hearings in San Francisco.

COAL PRODUCTION AND DISTRIBUTION

Production of bituminous coal during the week ended November 17 continued at a rate of 1,890,590 net tons per working day, an increase of 2 per cent over the previous week, according to the weekly report of the Geological Survey. If the present rate of production is continued, the report stated, November should prove the best month in the history of bituminous mining in the United States. The total production, including coal made into coke, is estimated at 11,343,538 net tons. Shipments of anthracite, as reported by the nine principal carriers, amounted to 42,199 cars; this is below the level maintained during October. For the country as a whole, the ratio of tonnage produced to the full time capacity for the week ended November 10 was 77.8 per cent as compared with 75.4 per cent during the previous week. The improvement was attributable to reduction in the losses due to labor shortage, strikes and mine disability. Losses due to car shortage increased from 14.5 per cent to 15.3 per cent.

October production of bituminous coal is estimated to have been 47,429,780 net tons, an increase over October, 1916, and the total production from January 1 to October 31 is estimated as 454,326,059 net tons. This is an increase of 40,833,075 tons over the production in the corresponding months of 1916, or 9.9 per cent.

Fuel Administrator Garfield has decided to request Director of Priority R. S. Lovett to cancel priority order No. 1, which gave preference to coal shipments bound to the Northwest by way of the Great Lakes. Under this order a vast coal supply has been built up in the Northwest in advance of the closing of lake navigation.

The Fuel Administrator's recommendation would provide that the lifting of the priority order would begin at the mines on November 30. Cars at the mines at that date could be loaded, and would be given priority until they arrive at their lake port destinations.

The cancellation of the lake priority order, it is stated, will allow the coal produced in the central coal fields to find its way to its natural markets, and will do much to relieve present conditions in the central and eastern parts of the country.

The Fuel Administration believes that the supply secured for the Northwest under the lake priority order will place that section on a parity with the rest of the country for the winter. If further coal is needed in the Northwest before spring, steps will be taken to insure all-rail shipments from nearby fields to complete the requirements. With the lifting of the priority order arrangements have been made to insure immediate relief for New England, where the enormous industrial demands for coal threaten to outstrip the supply.

The way was cleared for an increase in coal shipments by water to New England ports by an order directing all mines under contract to supply New England consumers with coal by water carriers, to deliver their maximum monthly requirements, effective December 1.

The order directs mines holding New England contracts to ship the maximum amount of coal called for by the contracts for consumption in the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut, where such coal is to be transshipped from rail to water carriers at Hampton Roads and at Baltimore. New England shipments are given preference over all shipments except coal requisitioned for railroad use and use of the government.

All coal producers holding New England contracts subject to the order are directed to file data as to their contracts with the United States Fuel Administration within ten days from the date of the order. The order gives New England Fuel Administrator James J. Storrow authority to supervise the distribution of this coal supply received by water after it reaches New England ports.

Western Railway Club Has Two Addresses

R. H. Aishton on Good Work Done by the Railroads
W. T. Krausch on Coaling Plants and Fuel Economy

AT the meeting of the Western Railway Club, held at the Hotel Sherman, Chicago, on November 19, R. H. Aishton, president of the Chicago & North Western, gave an informal address, after which a paper on coaling plants and fuel was presented by W. T. Krausch, engineer of buildings of the Chicago, Burlington & Quincy. An abstract of Mr. Aishton's address and also of the paper by Mr. Krausch are given below.

RAILROADS ARE NOT BREAKING DOWN

Mr. Aishton spoke, in part, as follows: At this time we hear a great deal about the breaking down of the railroads. Their ability to handle the coal supply has been questioned and some have suggested that the government take a hand in operating the roads. The transportation system of this country could not be operated as efficiently as it is now if it were under government control. In the last 10 months 9,000,000 tons more coal was mined and moved than in 1916, amounting to 150,000 cars. The total traffic handled in this period was 751,000 carloads more than in 1916, or over 39,000,000 tons. This is a notable accomplishment and one of which the roads can justly be proud. The Chicago & North Western alone has moved 116,000 carloads of materials for the army camps, yet commercial traffic has gone on just the same, although this business is not on a normal basis but in most cases 150 per cent of the normal figure. Between August 1 and November 12, the railroads transported 1,200,000 soldiers, the movement requiring 2,750 extra passenger trains, but the usual business of the roads was carried on.

One of the things that makes the problem of handling the traffic a difficult one is the inability of the railroads to secure more equipment. The cars that have been received in the last 10 months have not made up for those destroyed in the same period and this statement will apply to locomotives as well. This is not due to lack of foresight by the railroads. They had ordered the equipment but the government needed it and the emergency confronting the nation was so much more serious that the railroads gave up the equipment and they held that by doing so they could help win the war.

When we hear criticisms of the railroads let us take into consideration just what they have accomplished. With no more facilities than in 1916, the roads have handled this year a traffic that is 16 per cent greater. This record is due to the brains and energy of the men working for the railroads, together with the assistance of the shippers. The shippers have played a big part in bringing about the increase in the tonnage handled. The Chicago & North Western is hauling an average load three and one-half tons greater this year than last year, which means a saving of 300,000 carloads for that road alone.

Deferred maintenance is slowly creeping into the railroad property. The roads have received this year less than half the rails they needed and the same statement applies to ties and ballast. Deterioration is going on just the same and some day we will have to make up for the deferred maintenance. People who read railroad reports and see that maintenance expenses are increasing think the properties are being kept up to the standard, but they are not. I do not believe in dire forebodings, however. I for one think that no matter what burden is placed on the transportation system of this country it is going to be found equal to it.

At this time the railroads are seeking more revenue. The case of the eastern carriers is being considered now and the western roads will have a hearing later. I believe that the Interstate Commerce Commission will consider what the railroads have done and deal them justice. As to the future no man can predict, but in the words of John Paul Jones, I will say for the railroads, "We have not yet started to fight."

COALING PLANTS AND FUEL

By W. T. Krausch,
Engineer Buildings, Chicago, Burlington & Quincy

Coaling Plants

The subject of coaling plants is without question one of the most important to be considered in railroad operation, and it is receiving most careful consideration. Each particular plant is a study in itself, requiring careful design to meet the conditions under which it is to be constructed and operated. The main features controlling the design are, in general, as follows:

1. Capacity of plant. 2. Kinds of coal handled. 3. Daily consumption. 4. Type of cars used (gondola, box or self-cleaning). 5. Length of receiving hopper. 6. Number of tracks served with coal. 7. Whether or not weighing or measuring apparatus is to be considered. 8. Track clearances. 9. Whether or not coal is to be crushed or broken. 10. Kind of power required or available. 11. Whether or not coal is mixed. 12. Kind of construction (whether frame, steel or reinforced concrete). 13. Whether or not ground storage is to be considered. 14. Whether or not sand storage and drying are to be considered. 15. Whether or not cinder plants and pits are to be considered. 16. Fire regulations and protection. 17. Whether a terminal or isolated plant. 18. Location of plant. 19. Release of cars. 20. Switching.

These features are simply general and give an idea of the varied conditions which control the design. After having carefully studied the conditions under which the plant is to be constructed, we can decide on the type of structure to be used, and this, at times, is most difficult. The conditions just given, however, govern the type to a large degree. In this connection the following considerations play a most important part—namely:

1. The capacity of the plant. 2. The ground area covered by the structure. 3. Land value. 4. Number of tracks coaled. 5. Kind of cars used. 6. Kind of coal handled. 7. Whether or not weighing or measuring pockets are to be considered.

The cost of operation and maintenance of these plants is a vital subject. This cost varies to a great extent and is dependent on the following conditions:

1. Kind of cars used. 2. Simplicity of design. 3. Daily consumption. 4. Kind of care of machinery and power. 5. Kind of coal handled. 6. Labor operating plant. 7. Supervision. The actual cost of operation and maintenance varies greatly and actual costs are only secured by keeping close record of the particular plant in question.

As an illustration relative to the cost per ton of handling coal, one man can unload a self-dumping or self-cleaning coal car of 40 to 50 tons capacity in about 30 minutes. On the other hand, one man can shovel out of a gondola car at an average of, say, 25 tons per day of 10 hours, based on fair run-of-mine bituminous coal. This simply illustrates the great variation in the cost of handling coal from self-cleaning cars and gondolas.

The types of plants now in general use may be classified

as follows, starting with the oldest type (eliminating, however, the old bucket and jib crane type and platform type):

1. Incline trestle type, with, say, maximum grade on incline of 5 per cent. 2. Steep incline trestle type, with grade from 20 per cent to 25 per cent. 3. Locomotive crane types. 4. Clamshell bucket type with trolleys. 5. Small bucket conveyor type (commonly known as the "mechanical" type). 6. Continuous belt type. 7. Large bucket type (in which buckets of a large unit capacity are used, from 1 to 2½ tons capacity, as, for instance, the Holmen or Krausch bucket type).

(1) *Incline Trestle Type:* This is one of the older types in use, and is designed to deliver coal to one or two tracks. It may be divided into three classes, as follows:

"A." A plant having measuring pockets of given capacity of from two to six tons on one or both sides, and of any desired number.

Coal cars are pushed up the 5 per cent incline by a locomotive, and coal is shoveled directly into the measuring pockets, the sides of the car being about on the level or preferably a little higher than the measuring pockets. In this type of plant, coal is handled in gondola and occasionally in box cars.

"B." A plant having storage bin or bins of any given capacity or number. Coal cars are pushed up the incline and placed directly over the storage bin. In this type of plant, all kinds of cars can be used, but the self-cleaning cars to great advantage. If the coal used is of such a nature as to require breaking, steel bars about ¾ in. by 4 in. in size are placed over the bin or bins and spaced the required distance apart, say 5 inches or more. Coal is dropped or shoveled directly on these bars and broken through and over them by means of large sledges.

"C." A plant having storage bin or bins of any given capacity with scale or measuring pockets, located directly under the bins. Coal is handled in this case precisely the same as in the second case, except that coal is fed into the scale or measuring pockets from the storage bin above, by means of controlling gates operated from below.

In the fixed charges for operating these plants, the cost of switching and placing cars on the trestle by a locomotive is not ordinarily included. This method is dangerous and great care must be used by the engineer in handling cars up and down the incline.

(2) *Steep Incline Trestle Plants, with Incline Grades of 20 Per Cent to 25 Per Cent:* In this type of plant, cars are pulled up the incline by means of an engine and hoist—usually located on top of and in the rear of the coal stations. The power may be either steam, gasoline, or electric. A general description would be the same as just given for the incline trestle type under "B" and "C," except for the steep incline. This type of station requires a much shorter incline, does away with a great deal of switching, and is much safer. It also increases the possibilities of providing storage room, and for plants of large storage capacity, is much cheaper than the low trestle type. Preferably the design is made for one or two tracks.

(3) *Locomotive Crane Type:* This type can be used to advantage under certain conditions; namely, at terminals. It requires from six to twenty minutes to coal an engine with a locomotive crane, depending on the amount and kind of coal handled. Coal can be handled directly from the car to the tender or from a pile to the tender. To avoid delay to engine service, cranes are operated to handle coal direct from the cars to the coal storage bin.

At terminals, the use of the crane has many advantages besides the direct handling of coal—namely, transferring coal from cars, handling cinders, handling sand, etc. Its value is great in emergency cases. In handling coal for fuel storage, it gives very satisfactory results.

(4) *Clam Shell and Large Bucket Type Operating on Trolleys:* These types are flexible, the clam shell type handling the coal directly from the car to the storage or bin. With the large bucket type, coal is handled from the cars directly to the hopper and fed by automatic gates into large capacity buckets. These buckets are arranged to insure full loading. They are hoisted in the elevator leg to the required height, then automatically locked into the trolley, which travels on a slightly inclined track, directly over the storage bins. The buckets are tipped automatically and coal is discharged at any desired point. These plants are designed with counter-balanced buckets. The clam shell type is used chiefly in commercial and power plant work.

(5) *Small Bucket Conveyor Type (commonly known as Mechanical Plants):* This type has great flexibility to suit different conditions, and can be practically used for any location or situation.

These plants, if well cared for and equipped with proper machinery throughout, give excellent service. A general description of this type is as follows:

Coal is unloaded into the receiving hopper from any type of car, from there is fed by an automatic loader directly into the elevator boot, from there raised by the elevator directly to the storage bin above. There are several types of elevator —namely, the continuous and overlapping bucket type, and the pivoted type. These two types of elevators must run slowly, at a speed not to exceed, say, 50 ft. per minute. The pivoted bucket must run at slow speed on account of the method of loading and dumping the buckets. The continuous elevator necessarily runs slowly on account of its great handling capacity.

The rigid bucket is designed to run at a speed of about 100 ft. per minute, the buckets spaced to suit the capacity required.

Those plants may be equipped with scales, measuring pockets, crushers, overhead or below, with breaker bars over receiving hopper and, in fact, are most flexible and can practically meet any desired condition.

When these plants were first put into service, the chain for the elevators was commonly made of malleable iron. This, however, gave unsatisfactory results. The practice now is to use steel chain entirely, with most satisfactory results.

(6) *Continuous Belt Type:* A great many plants of this type have been erected in past years. This raises the coal to the storage bin or bins on a continuous belt of rubber or cotton, on an incline of about 30 degs. as a maximum. This type is not as flexible as the small bucket type or mechanical stations. Under good conditions, with a fair quality of coal and careful attendance, very favorable results have been obtained. The coal is unloaded into a receiving hopper from any type of car, and from there by loader onto the belt and is then elevated to the storage bins.

(7) *Large Bucket Elevator Type:* This type is one of the most recent and is gradually coming into use, due to its simplicity of design and low maintenance cost. The description is briefly as follows: Coal is unloaded from any kind of car directly into a receiving hopper and from there fed into buckets of one or more tons capacity. These are raised by means of a hoisting engine to the storage bin above and the coal is dumped automatically into the bin. These plants may be equipped with scales or measuring pockets, or breaker bars over the receiving hopper, and are economical as to first cost and operation. These plants may also be operated with one bucket and increased in units as desired, depending on the capacity of the plants. Buckets may also be placed on one side or on both sides, depending on the conditions. In using the two bucket scheme, the weight of one is counterbalanced by the weight of the other, one ascending while the other descends.

In order to reduce the cost of handling coal and mainte-

nance to a minimum, the following important factors must be considered:

1. The proper type of station to be selected to meet all the conditions. It must be understood that each station considered is a distinct and separate problem.
2. The use of self-cleaning cars is a most important factor.
3. Emergency storage.
4. Plants must be reliable, using the best type of machinery and appliances throughout with ample power; at important stations, where delays are serious, the feasibility of duplicate machinery must be considered.
5. Fireproof construction—steel or reinforced concrete or combination.
6. Where frame structures are erected, fire protection should be provided, the power house being built some distance from the coal station.
7. Switching reduced to a minimum—car puller can be installed at any ordinary plant.
8. Breakage of coal must be reduced to a minimum.
9. Good labor must be employed and proper care given all machinery and appliances.
10. A most important factor is supervision.

This briefly describes railroad coal handling plants. Their design and construction are being given most careful consideration so as to create the greatest fuel efficiency. The men operating the plants are selected so that we may get the best results. The power plants and mechanical installations are given proper inspection and the operations, supervision. Then, finally, it resolves itself into the effort to keep the plant doing good work and getting results.

I am bringing this to your particular attention to show that the railroads are, and have been, working most consistently along the line of fuel economy in their plants, not only in operation, but also in the design. The present cost of steel has played a most important part in the total cost of so-called fireproof plants. Consequently we decided on a substitute, and this is the result: A combination structure built of wood and reinforced concrete slabs, the posts, girts, beams and braces being of wood. The storage pocket walls and floors are of thin, reinforced concrete slab construction. The upper or lighter structure above the bin is of 2 in. concrete walls on heavy metal lath. Two of these plants are now under construction.

Stationary Plants

Now let us consider the stationary plant for a moment. Efficiency here means:

1. A properly designed modern power plant equipped with high class boilers, burning the right kind of coal, with efficient engines and equipment, handled by a competent engineer and fireman, and the necessary help under proper supervision.

How many plants are there like this and what is their total efficiency? Experts tell us that with a good steam engine, a good furnace, and a good boiler, a horsepower hour can be produced from one pound to a pound and a half of coal. We find, however, that the ordinary steam engine uses from three pounds to as high as twenty pounds. This gives us an opportunity to increase our efficiency in a great many ways. The engineer in charge of operating the plant must be competent, the fireman must be competent, and they must have proper supervision. The boiler settings must be tight, and the draft regulated for the best results. The fire bed must be kept the right depth to suit the work. Further, the engineer and fireman should learn a little chemistry.

I firmly believe the way to get results is to take the plant you have and examine it most carefully. Get after the air leaks, steam leaks, and water leaks, get proper firing, the right kind of coal, proper draft and regulation, get rid of the soot and scale. Install proper grates and stokers. See that the engines, generators, pumps and other equipment are in good order, working without leaks or waste. Use the proper lubricants and packing. Insist on performance and maintenance records, get the right man on the job and, above all, give the plant constant and proper supervision.

The Locomotive

The condition under which the locomotive operates is entirely different from other types of power, operating at high and low speeds, over grades, under maximum and minimum loads, in all kinds of weather, and under the most severe strains. Modern locomotives are now usually equipped with superheaters, which will save 20 per cent of the coal, with a superheat of 200 deg. F. If the enginemen are careless and carry the water too high or allow the boiler to foam, much of the possible saving is lost, due to the reduced temperature of the superheated steam. In winter, a locomotive will burn as much as 25 per cent more coal than in summer to haul the same tonnage.

The railroads, by using larger types of power, are constantly creating higher efficiency, as they are more efficient and there is a considerable saving in coal because they reduce the number of trains (which means less delay at meeting points), which increases the fuel consumption.

Railroads have organizations specially fitted to cope with the problem of fuel economy, which means that individual supervision and instruction are given to each and every engineer and fireman.

Discussion

L. R. Pyle (Soo Line) brought out the fact that there was a considerable waste of transportation facilities and fuel at this time, due to the fact that coal is not being properly cleaned. He recommended that the railroads give more attention to fuel at the mines and also urged the centralization of authority in matters pertaining to the handling and use of fuel on every railroad. W. E. Dunham (C. & N. W.) expressed the opinion that much more could be done by the railroads to save fuel. Under the prevailing prices a small saving justifies a relatively greater expenditure than heretofore. Other speakers mentioned the savings to be secured by designing tenders to prevent the loss of fuel and by equipping stationary plants with superheaters and feed water heaters.

Oil Gas for Train Lighting.—Those railway companies who use gas for their train lighting have every probability of being hit shortly by a scarcity of the oil from which the gas is compressed. Already some of these companies are experimenting with mixtures of oil and coal gas, but the results are not satisfactory; even the addition of only 25 per cent of coal gas makes a very indifferent light, while, of course, a mixture of half oil gas and half coal gas would be considerably worse. In this connection it may be remarked that it was long ago recognized that could trains be lighted satisfactorily by coal gas there would be many advantages. The gas could be obtained from the gas mains and there would be no need for compressing plants nor for the traveling gas containers. Experiments were made by some companies, e. g., the London & North-Western and Great Western, but it was not seen how the difficulties could be overcome. The matter was not, however, seriously pressed because of the gradual greater use of the electric light for train lighting. This, though, cannot be accepted as the available remedy for the shortage of oil at this time. On account of the scarcity of labor and the difficulty that would be experienced in getting the material—as it has to be obtained from sources that are very busy at the present time with war work—it is out of the question installing vast equipments of electric train lighting just now.—*Railway Gazette, London.*

A Study of Transverse Fissures in Steel Rails*

A Discussion of the Conditions Leading to This Type of Failure; Consideration of the Protective Measures

By James E. Howard
Engineer Physicist, Interstate Commerce Commission, Washington, D. C.

ON August 25, 1911, a rail failed on the Lehigh Valley, causing a disastrous wreck. The surface of the fracture was in a plane at right angles to the length of the rail. There was a dark-colored, oval spot on this surface, located on the gage side of the head, representing the part of the rail which was the first to fracture. The nucleus of this spot showed that the fracture had an interior origin. Other fractures of this kind, the peripheries of which had not reached the surface of the rail, presented surfaces having a silvery luster. The darkened surface of the present fracture was caused, doubtless, by the air having had access to it.

This fracture was recognized as a fatigue fracture of a modified type, its interior origin having been due to a component in the rail which is not usually present in cases of fatigue fractures. The metal next the running surface of the head of the rail was in a state of internal compression, this being the component not commonly met with in other cases, and which caused the fracture to have its interior origin. For the purpose of giving this modified type of fatigue fracture a specific name for identification, the term "transverse fissure" was applied.

No mystery was thought to attach to its formation, or to its development. The explanation of its occurrence seemed obvious in the light of common knowledge upon the behavior of steel under repeated alternate stresses. By reason of the state of internal compression at the running surface, the maximum tensile stresses in the head, under bending loads, were along an interior element. Here the tensile strains were higher than in the fibers more remote from the neutral axis. Under such conditions the fracture of the rail would be expected to have an interior origin. A discussion of the subject of transverse fissures essentially becomes a discussion of fatigue fractures, since they are believed to be identical.

The descriptive term, employed merely for the identification of this type of fatigue fracture, had the appearance of creating alarm. Apprehensions arose that a new phenomenon in the physical properties of steel had presented itself, the explanation of which was sought in every detail in the manufacture of the rail, omitting consideration, however, of the effects of service conditions, where the explanation really lay. Under this illusory search the subject soon took on a nebulous state; the distinguishing characteristics of a transverse fissure were lost sight of, and quite dissimilar fractures were reported under the same general terminology.

Brittleness of fracture in all grades of steel is characteristic of fatigue tests. Brittleness under repeated stresses, therefore, does not constitute evidence of defective or inferior metal. Primitive toughness is of value to meet occasional overloads at certain stages, but its value in prolonging the life of steel under repeated alternate stresses of moderate degree, if it has an influence, is not known. There are certain zones for each grade of steel within which its endurance is practically unlimited, and above which repeated stresses soon result in rupture. A fatigue fracture may be made in any piece of steel. It is only necessary that a given load shall be repeated a sufficient number of times, when rupture will ensue.

*Abstracted from a paper to be presented before the New York meeting of the American Institute of Mining Engineers, February, 1918.

Fiber Stresses Should Be Restricted

It would be prudent to restrict the fiber stresses in rails to less than 40,000 lb. per sq. in. It is ignoring general engineering practice and precedent to apply loads to a structure having no residual strength above the working loads. The occasional application of stresses in excess of this limit constitutes a menace to the integrity of the steel, although the working loads, in general, do not reach this maximum. If it shall appear that rails are subjected to stresses in service which approach or exceed the above-mentioned fiber stress, then their failure by fatigue will present no novel feature.

Steel rails in the track are subjected to bending stresses, the magnitude of which depends primarily upon the amount of the wheel loads; the number of repetitions within a given interval of time depending upon the density of traffic. The values of the static wheel loads admit of accurate determination. It is known that such loads are greatly exceeded when the trains are in motion.

Concerning the fiber stresses in the track under slowly moving locomotives, observations were made by the writer in 1893 and 1894, the results of which were published in the reports entitled "Tests of Metals." Even under the lighter equipment then in use, it was found "that rails were often strained higher than material is supposed to be in the case of bridges and other permanent structures." It was then brought out that wheel spacing influenced the results; that the leading pilot wheel caused much higher stresses per ton of wheel load than other wheels of the locomotive; that tie spacing did not afford the basis for computation of the fiber stresses, the wheel load and the moment of resistance of the rail being known; and that different kinds of ballast influenced the results.

At that time a rail was selected, representing good track conditions, and measured on frozen gravel ballast. It showed a variation in measured strains in different parts of its length of over 100 per cent, referring to the effect of one of the driving wheels. The aggregate longitudinal tension from eight wheels, at one place on the rail, was nearly three times that at another place along its length, while the compressive stresses displayed at one place were 10 times those measured at another place. The measured strains, although taken in the track 22 years ago, should effectually dispel any illusions that rails are uniformly strained, even under static conditions of loading.

In these early tests, the fiber stresses ranged from 10,000 to 18,000 lb. per sq. in. under the heavier wheels of the locomotives. There are more recently published accounts of fiber stresses, measured under trains traveling at moderately high rates of speed, the values of which range from 25,000 to 30,000 lb. per sq. in. with higher maxima in occasional observations in tension, the stresses being greatest in the base.

Rails in service not infrequently show appreciable local bends, acquired after they have been in the track. These bends represent permanent sets given the rails by loads which have exceeded the elastic limit of the steel. Some rails are bent downward at their ends, others are bent at regular intervals corresponding to the length of the peripheries of driving wheels of locomotives which have been over the

rails, the latter permanent bends being due to the dynamic augment of the drivers.

There are internal strains in rails which result from conditions attending their manufacture, and those which are acquired after the rails have reached the track. During fabrication, cooling strains are acquired. The shape of a rail is such that it is peculiarly susceptible to the acquiring of strains under ordinary conditions of cooling. The stage at which these cooling strains are chiefly acquired is after the rail has left the last pass of the rail mill, and has become a finished rail.

Normally, the parts first to cool are temporarily put into a state of internal tension, which is reversed to a state of compression when the entire mass has reached atmospheric temperature. When the rail is cold, it is common to find the flanges in a state of internal compression, with the metal along the middle of the base in a state of tension. At the junction of the web with the head and the base, a state of tension is common. The peripheral metal of the head is left in compression, with the interior of the head in tension. The cooling strains are usually much greater in the base than in the head of the rail. Cooling strains in the flanges of thin-flange rails have been found as high as 18,000 lb. per sq. in. compression, with metal in close proximity at the middle of the base in a state of tension. Longitudinal strains are referred to in these remarks. It is obvious that shearing strains will be set up by these contiguous internal strains of tension and compression.

The usual initial state of compression in the flanges may be reversed to tension by cold-bending the rail, accomplished by an overload of compression on the base. Gagging is merely applying an overload, causing a permanent set in the rail, and setting up new internal strains for the purpose of initially straightening it. It disturbs the primitive state of strain left by cooling, leaving the rail in a state of critical equilibrium from which it is again easily disturbed by track conditions.

When the rail reaches the track, cold-rolling of the running surface of the head takes place under the action of the wheel pressures. The top of the head then acquires a higher state of internal compression than left by normal cooling, the strains in the head acquiring an ascendency over those of the base. Internal strains of compression next the running surface have been found in rails from the track corresponding to over 20,000 lb. per sq. in. stress.

Internal Stresses From Wheel Loads

Internal strains from wheel loads are unavoidable. The hardest rails are not exempt from this action of the wheels, nor do the lower wheel loads fail to introduce internal strains. An experimental inquiry into the effects of wheel pressures showed that a wheel load of 15,000 lb. introduced strains that were higher, superficially, than those resulting from the higher wheel loads of 25,000 and 35,000 lb. It was also noted that rerolling with 35,000 lb., after lower wheel pressures had been used, resulted in diminished internal strains over those due to the lower pressure. Furthermore, peining the surface with a light hand hammer introduced internal strains of greater magnitude than witnessed in either the experimental rails or those from the track.

In this connection, it is necessary to take into account the volume of the metal directly affected by the cold-rolling, and also the effect of repeated alternate stresses on the physical properties of the steel. The depth of penetration was found to be greater with the higher wheel loads than with the lighter loads or with the peining. The ratio of the volume of metal directly affected by the cold-rolling to that of the reacting metal is also a matter for consideration. The interior of the head is put into a state of tension to balance the volume of metal which is in a state of compression. Tensile stresses in the interior of the head equivalent to the measured strains have reached values of 8,000 to 9,000 lb. per sq. in.

Components Which Cause Fatigue Fractures

Of the two components which tend to cause fatigue fractures in steel rails, it will be borne in mind that one of them, namely, the state of internal compression at the running surface of the head, and the concomitant state of longitudinal tension in the interior of the head, will be introduced by the lighter wheel loads as well as by the heavier ones. These internal strains act upon the entire length of the rail. The direct bending stresses, the other component, will depend upon the wheel loads. If not strictly proportional to the wheel loads, still the bending stresses will be greater as the wheel loads are increased. Again stated, the two components which tend to cause fatigue fractures are the direct bending stresses from the wheel loads and the internal strains introduced by the cold-rolling of the wheels on the head of the rail. The latter are responsible for a disturbance in the physical properties in addition to the introduction of internal strains.

It is of importance to acquire data upon the relative effect of these two components in an endeavor to ameliorate conditions and prolong the life of the rail. Interest centers upon that influence which causes the maximum longitudinal tension, since a fatigue fracture is one of tension. The prompt display of transverse fissures in rails of 125-lb. weight leads to the inference that the cold-rolling component is of grave importance, which may be greater relatively than the direct bending stresses. There have been examples of rails sustaining traffic after the head had been practically separated by the development of a transverse fissure. The web and base of the rail, for the time, resisted the bending stresses, illustrating the ability of the steel to endure very high fiber stresses for a limited number of repetitions.

Primarily, it is desirable to ascertain, by means of direct experimental inquiry, the ability of steel rails to endure repeated alternate stresses, acquiring this information upon the rail in the condition in which it comes from the rail mill, and before any cold-rolling by wheels in the track has taken place. The section of the rail is such that opposing cooling strains are necessarily present in the finished rail. There is no assurance that a rail in full cross-section will display the endurance under repeated alternate stresses which carefully prepared bars of the laboratory have shown. Tests of this general nature on rails of full cross-section have yielded results which emphasize the need of this information.

Next, it is important to ascertain the limit of endurance of rails which have been in the track and have acquired a state of internal strain. There is no apparent reason why this barrenness of fundamental data upon steel rails should longer continue. In the use of materials of construction, two features should be known: The ability of the material to endure stresses, in the form in which it is used; and knowledge of the magnitude of the stresses which are to be endured. The steel-rail problem presents an example in which neither of these basic considerations has been definitely known. This dearth of relevant information is mentioned since its absence has led to many unsupported conjectures as to the causes of rail failures.

Transverse fissures occur in the head, and not in the web or the base. They commonly make their appearance on the gage side of the head, or central over the web. In a lot of 663 transverse fissures, 535 were located on the gage side of the head, 128 over the web, and none on the outside of the head. The preponderance of transverse fissures on the gage side of the head is significant, of course. Conditions of loading commonly reach a maximum on the gage side of the head.

It has been found that transverse fissures made by progressive gagging of new rails can be located at will on the right or the left side of the head or central, according to the manner of applying the load. It is only necessary to apply the load to the side of the head on which it is chosen to

locate the fissure, to accomplish that result. Twenty-four transverse fissures were experimentally made in new rails by progressive gagging. By progressive gagging is meant that the rail was gagged at close intervals along its entire length, first on the head and then on the base, repeating the process until rupture ensued. The number of blows required to be struck at any one place ranged from 800 to 4,000. The total number per rail length of 33 ft. was from 50,000 to 250,000 blows.

The bending stresses given the rails in these tests were in excess of those experienced in the track, a circumstance which led to their rupture before the usual burnishing effect was accomplished which the opposite faces have upon each other in producing a silvery luster; rupture also being completed before the nuclei of the fissures had extended and covered a large part of the cross-section of the head. Efforts to produce transverse fissures by repeated gagging in one plane only were unsuccessful. Such rails displayed the common type of fatigue fracture; that is, the fractures had exterior origins in each case. Progressive gagging has an effect akin to the cold-rolling of the wheels.

In rails from the track, transverse fissures have been found along the same element of the head, in different stages of development. This manifestation corresponds to the shattering effect of repeated alternate stresses witnessed in laboratory test bars which have been exposed to a uniform bending stress over a part of their length.

Critical examinations have shown transverse fissures to have their origins in metal microscopically sound and normal in structure. Diligent research has failed to reveal micro-defects to which the origins of the fractures could be attributed. The composition of the steel at and in the vicinity of the fissures has shown no chemical reason why the fissures should have their origins at the places where they were found.

There has been no example of a transverse fissure in a rail which has not been in service, excepting experimental fissures. Rolling conditions would preclude the presence of a transverse fissure in an advanced stage of development in a new rail. The reduction of the metal in the rolls orients slag and other inclusions, arranging them in a direction parallel to the length of the rail, and not crosswise.

It is well known that slag inclusions are present in some degree in most steels. Slag filaments are drawn out and may be detected in the cross-section of the rail. In longitudinal sections they are at times prominently shown; but such longitudinal seaminess, when it exists, has no connection with the formation of transverse fissures. Composite sketches showing longitudinal seaminess in parts of the head remote from the places occupied by the nuclei of transverse fissures necessarily have no bearing upon the question of the development of transverse fissures.

It not infrequently happens, however, that longitudinal seams of another kind are developed in conjunction with transverse fissures, wheel pressures being the common cause for each. Shearing strains are set up in the head of the rail by the wheel pressures. When an acicular streak is reached, which may represent a slag inclusion, opportunity is afforded for the starting of a longitudinal seam. Shearing fractures which develop in vertical planes are designated as split heads. In other cases, the separation takes place in horizontal or oblique planes, and these latter may be developed independently or associated with transverse fissures. Each of these types of rupture was represented in the rail which failed on the Lehigh Valley.

Effect of Gagging

The effect of gagging has been referred to in respect to introducing internal strains or in modifying those which preexisted. Rail sections were subjected to normal and excessive gagging, also to the more severe ordeal of being struck with the tup of a drop-testing machine. Microscopic examination directed to ascertain the effect, if perceptible, did not show any appreciable distortion of structure either at the places directly acted upon or in other parts of the cross-sections of the rails. Microscopically, the mill scale on the surface of the rail was disturbed in the vicinity of the place gagged or struck with the tup of the drop-testing machine. Surface indications comprised all that was visible resulting from this treatment.

Attention has so generally centered upon the results of the drop test, the bending test, or the tensile test, in respect to the display of primitive ductility, that the phases through which rupture is reached by repeated stresses have not received adequate consideration. Specifications governing the acceptance of the metal rigorously demand that a certain elongation shall be displayed. The elongation called for may be only a few hundredths of an inch per inch of length of sample, but such display is made the decisive measure for the acceptance of the steel. It would not be incompatible with experimental results for the steel which was deficient one-hundredth of an inch in its primitive display of elongation to show under repeated stresses an aggregate elastic extension of several miles, so radically different may be its primitive behavior and its behavior under long-continued alternate stresses.

In like manner, chemical requirements are frequently made the object of exact fulfillment. Without advancing other reasons, the cause of the failure of materials under service conditions has been attributed to some slender deficiency in fulfilling the specifications on which the material was supposed to be made. It is not always clear that the most suitable steel for the purpose is asked for in specifications.

Attributing the cause of failure of a rail to the use of one deoxidizer or another, or to an excess of some non-metallic constituent above prescribed limits, can hardly carry conviction in the absence of information which connects them as cause and effect, if they stand to each other in that relation.

It is desired to emphasize the fact that the durability of a rail consists of its ability to retain its integrity under repeated deformations. A direct test consists of subjecting the rail to repeated deformations, conducted upon the shape and dimensions in which it is used. The results of other tests may be accepted as indexical of the properties desired, provided the relations between the two are established. In general, however, direct methods are preferred to indirect ones.

Transverse Fractures Are Fatigue Fractures

In conclusion, a quotation will be presented from a recent report issued by the Interstate Commerce Commission, Division of Safety, embodying remarks by the writer on the investigation of a rail which failed in the track, displaying a number of transverse fissures:

"Neither chemical analysis nor microscopic examinations have shown a definite cause for the development of transverse fissures. They have occurred in rails of different weights; in those of different ingot positions; in the product of each of the two great methods of steel making, Bessemer and open-hearth; in direct-rolled rails and in those from reheated blooms; over ties and between them; they have made their appearance in the different seasons of the year, and in rails rolled in the different seasons; they occur where, according to chance, the rails may have been gagged and from the number and proximity of the fissures, where they probably were not gagged, they have displayed themselves singly, and independent of other types of rupture, and also associated with shearing fractures or seams which have developed in planes at right angles to the fissures; they are found in the head and not the base of the rail; they appear in rails which show very little wear; they are not confined to any one railmill, nor to northern or southern mills, nor to any one year's rolling, but have been displayed by rails rolled at periods of time separated by not less than two decades. The latter fact should remove doubts concerning any peculiar

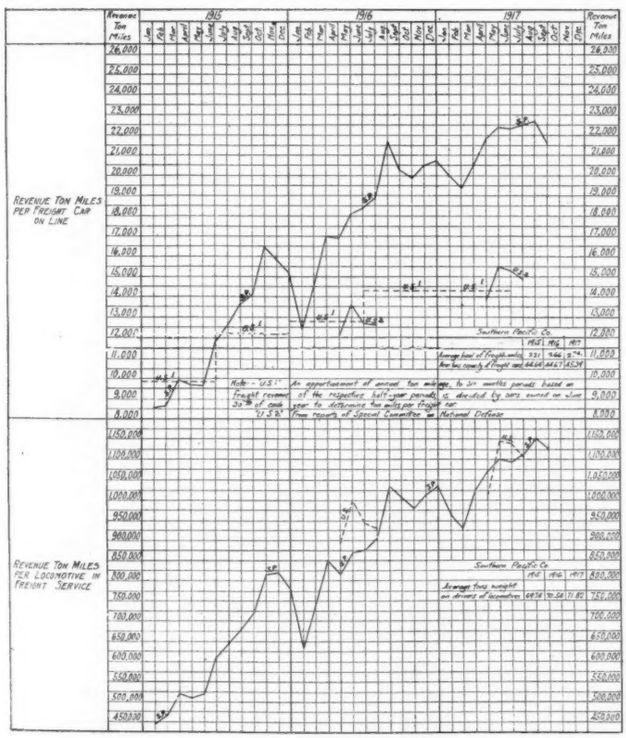
conditions having found their way into modern mill practice influencing this type of failure.

"On the other hand, traffic has increased, wheel loads have increased, and speeds have increased; and transverse fissures are in general found where these conditions are well advanced. The girder strength of the rails has been increased, while the impinging pressures of the wheels still remain without amelioration. It is a disquieting matter that rails of the heavier sections recently laid have displayed transverse fissures. Mere increase in weight of section has not brought with it immunity from failure in this manner. It gives emphasis to the need of acquiring further data upon the features which have been discussed in this report.

"The conclusion seems well founded, the transverse fissures are fatigue fractures, and that they develop in rails which are structurally free from any known defect. It is a modified type of fatigue fracture in which there is a compressive component in the rail next the running surface of the head. The presence of this compressive component accounts for the interior origin of the transverse fissure. It constitutes the difference which the introduction of the term 'transverse fissure' was intended to emphasize over the common type of fatigue fracture in which this component is absent and which in consequence thereof has an exterior origin."

INCREASED EFFICIENCY IN USE OF EQUIPMENT

The accompanying chart was prepared for the officers of the Southern Pacific for the purpose of showing the remarkable increase in efficiency in the use of motive power and equipment, especially during the last two years. This is the result both of the great increase in traffic and of the heavier loading per car and per train as well as of unusual efforts



Revenue Freight Traffic Per Unit of Equipment Southern Pacific Co. and All Railroads of United States

to increase the mileage of each car and locomotive per day. It will be noted that the revenue ton miles per car on line on the Southern Pacific increased from something over 8,500 in January, 1915, to over 22,500 in August, 1917, while the revenue ton miles per locomotive in freight service increased from about 450,000 in January, 1915, to 1,150,000 in August, 1917. The chart shows the almost steady increase, in comparison with the average for all roads.

RAILWAY REGIMENTS AT CAMP GRANT

In addition to the nine regiments of railway engineers now in France two additional regiments composed mainly of railway men are now being organized at Camp Grant, Rockford, Ill., and will soon be ready for service. These are the Twenty-First Engineers, for light railway construction and operation, commanded by Col. Ernest D. Peek, and the Thirty-Fifth Engineers, a shop regiment, commanded by Col. A. E. Waldron. The roster of officers of the Twenty-First Engineers is as follows:

Regimental Headquarters: Colonel Ernest D. Peck, commanding officer, regular army; Lieutenant Colonel Hiram J. Slifer, formerly general manager, Chicago Great Western; Major Lunsford E. Oliver, supply officer, regular army; Captain David P. Banks, superintendent terminals, Louisville & Nashville, Evansville, Ind.; First Lieutenant George E. Miville, adjutant, regular army.

Headquarters First Battalion: Major Marshall R. Pugh, commanding, consulting engineer, Philadelphia, Pa.; Captain Arthur J. Minor, assistant engineer, Southern Railway; First Lieutenant Paul V. Brown, exchange officer, assistant engineer, Chicago & Alton.

Headquarters Second Battalion: Major Thomas R. Ryan, commanding, general manager, Brazil Railway, Paulo, Brazil; Captain Harry R. Gabriel, assistant chief engineer, Argentine Railway.

Company A: Captain Robert R. McGregor, commanding, assistant engineer, Southern Pacific; First Lieutenant Lewis G. Waterbury, assistant superintendent, Ponce & Guyana R. R., Porto Rico; First Lieutenant Charles R. Woods, land agent, Elgin, Joliet & Eastern Ry.; Second Lieutenant Harry E. Comfort, civil engineer; Second Lieutenant Matthew S. Butler, division engineer, Minneapolis, St. Paul & Sault Ste. Marie; Second Lieutenant Chester H. Plimpton, mess officer, mechanical department draftsman, Pennsylvania Railroad.

Company B: Captain Earl W. Evans, commanding, superintendent construction, New Orleans Terminal Company; First Lieutenant William N. Briscoe, draftsman, Baltimore & Ohio; First Lieutenant Charles T. Butler, engineer, Pennsylvania Railroad; First Lieutenant Morris B. Pumphrey, assistant engineer maintenance, Chicago, Ottawa & Peoria; Second Lieutenant Richard S. McCabe, timekeeper, Baltimore & Ohio; Second Lieutenant Scott D. Christopher, assistant engineer, Illinois Central.

Company C: Captain Michael M. Sheedy, commanding, safety inspector, Pennsylvania Railroad; First Lieutenant Otis T. Gregg, secretary, Gregg Company, Ltd., Hackensack, N. J.; First Lieutenant Hudson D. Dravo, road foreman of engines, Philadelphia, Baltimore & Washington; Second Lieutenant Charles M. Greeley, special mechanical apprentice, Pennsylvania Railroad; Second Lieutenant Arthur B. Helwig, mechanical inspector, Pennsylvania Railroad.

Company D: Captain James P. Nash, commanding superintendent terminals, El Paso Southwestern; First Lieutenant John M. Kimmel, Jr., assistant engineer, El Paso & Southwestern; First Lieutenant John S. Kiesel, assistant foreman, Pennsylvania Railroad; Second Lieutenant Edward P. Walsh, superintendent construction, Walsh Construction Co.

Company E: Captain William R. Scott, commanding, secretary, Joint Car Association, El Paso, Texas; First Lieutenant John C. Rill, trainmaster, Pennsylvania Railroad; First Lieutenant Robert A. Radford, assistant engineer, Lehigh Valley; First Lieutenant George C. Lightner, assistant engineer, Canadian Government Railways; Second Lieutenant Clarence J. Derrick, special engineer, Cleveland, Cincinnati, Chicago & St. Louis; Second Lieutenant Ray L. Hufford, concrete construction engineer.

Company F: Captain Frank T. Bowles, commanding, assistant superintendent transportation, San Antonio & Aran-

sas Pass; First Lieutenant Raymond H. O'Brien, electrical engineer, Pennsylvania Railroad; First Lieutenant Philemon S. Lewis, trainmaster, Philadelphia & Reading; First Lieutenant Harry E. Gabriel, assistant superintendent, St. Louis-San Francisco; Second Lieutenant Harry W. Dun, Jr., resident engineer, Atchison, Topeka & Santa Fe.

Attached: Captain Alfred B. Lewis, casual officer, locating engineer, Alaska Northern; Captain Clarence Roberts, road foreman engines, Pennsylvania Railroad; Captain Jesse G. Lorton, superintendent, Illinois Central; First Lieutenant Harvey W. Bell, general manager, Bell Locomotive Works; First Lieutenant Alfred D. Chandler, mechanical engineer, Baldwin Locomotive Works; Second Lieutenant Charles S. Heebner, mechanic, Philadelphia & Reading; Second Lieutenant Maurice E. Vermillion, regular army; Captain Hector Mansfield, assistant trainmaster, Philadelphia & Reading; Second Lieutenant James F. Ross, regular army; First Lieutenant R. L. Mock, assistant superintendent, Atlanta Joint Terminals; First Lieutenant A. O. Spurr, general yardmaster, Baltimore & Ohio.

Medical Department: Major James B. Hastings, surgeon; First Lieutenant Carl H. Bartling, assistant surgeon; First Lieutenant James H. Ross, dental surgeon.

THIRTY-FIFTH ENGINEERS

Regimental headquarters: Col. A. E. Waldron, commanding officer, regular army; Lieut.-col. G. H. Vincett, manager of plant, Standard Steel Car Company; Capt.-adj. Herman C. Huffer, Jr., of Huffer Campbell & Company, bankers, New York, and vice-president Augusta Southern Railway, president, Atlantic & Western and director Georgia & Florida Railway; Capt. James T. Blackstock, manager of shop, Standard Steel Car Co., and Captain W. C. Cole.

Headquarters First Battalion: Maj. Joseph F. Surridge, superintendent, Canadian Car & Foundry Co., and Capt. William E. Abbot, retired army officer; Capt. Robert Tinsley, formerly superintendent at Pullman Company's shops, Pullman, Ill.; First Lieut. Paul E. Carter, sales department, General Railway Signal Co., New York.

Headquarters Second Battalion: Maj. John S. Douglas, superintendent, Eastern Car Company; Capt. Herlof Amble, foreman erecting shop, Standard Steel Car Co.; Capt. William C. Lindner, assistant general foreman, mechanical department, Pennsylvania Railroad; First Lieut. F. W. Hausmann, electrical and consulting engineer, Allis-Chalmers Co., Milwaukee.

Headquarters Third Battalion: Maj. Thomas A. Dooley, Jr., Capt. W. L. Tedford, supervisor, Pullman Company; Capt. Charles F. King, First Lieut. Earl J. Zinck.

Company A: Capt. Hill P. Wilson, junior assistant valuation engineer, Texas & Pacific; First Lieuts. James M. Morse and Fletcher J. Snow; Second Lieuts. James C. Lamb and N. C. Raabe, machinist and electrician, Standard Steel Car Co.

Company B: Capt. Joseph W. Moore, assistant engineer, valuation department, Illinois Central; First Lieuts. Russell M. Smith, assistant road foreman of engines, Pennsylvania Railroad, Wilbur Oglesby, superintendent, South Georgia Railway, and A. W. Holbrook; Second Lieuts. Adam C. Warfel, safety engineer, Hartford Accident and Indemnity Company, and Robert M. Totten, draftsman, Standard Steel Car Co.

Company C: Capt. William R. Pearson, assistant valuation engineer, Nashville, Chattanooga & St. Louis; First Lieuts. John E. Brown, O. S. Dickson, motive power inspector, Pennsylvania Railroad, and Don L. Clements, foreman, New York Central; Second Lieuts. Ralph F. Getz, Benjamin G. Helsel, clerk, Standard Steel Car Co.

Company D: Capt. E. Burton Hocker; First Lieuts. Fred C. McFarland, civil engineer, Pennsylvania Lines West, John S. Wetherill and Howard Dyke, foreman, Standard Steel Car Co.; Second Lieuts. Frederick W. Ford, junior draftsman, Boston & Maine, and Robert J. Byron, shop foreman, Pennsylvania.

Company E: Capt. Frederick N. Hatch; First Lieuts. Richard E. Trippe, assistant engineer, Atlanta & Anderson Construction Company, Walter Budwell, roundhouse foreman, Norfolk & Western, and James L. Blair, inspector, Standard Steel Car Co.; Second Lieuts. Roland G. Stafford, structural draftsman, Boston & Maine, and Harry Darlington, Pittsburgh Forge & Iron Company.

Company F: Capt. H. Fueller, night superintendent, Ralston Steel Car Company; First Lieuts. Merle V. Holmes, office engineer maintenance department, Atchison, Topeka & Santa Fe; Walter S. Mack, David Halderman, foreman, Standard Steel Car Co.; Second Lieuts. E. B. Wilkinson, James W. Ryan, assistant erecting shop foreman, New York Central.

Company G: Capt. William G. Vincett, Standard Steel Car Co.; First Lieuts. L. T. M. Ralston, Pennsylvania State highway department, Arthur F. Ainslie, assistant engineer, maintenance of way, Northern Pacific, William J. O'Brien, order foreman, Standard Steel Car Co.; Second Lieuts. Leo J. Stein and William E. Doll.

Company H: Capt. Wilke Woodard, consulting engineer; First Lieuts. William F. Philbrick, assistant yardmaster, Norfolk & Western; Horace M. Fetterolf and H. B. Gaither, inspector of locomotives, Baltimore & Ohio; Second Lieuts. Reginald V. Offutt, machinist, Baltimore & Ohio.

Company I: Capt. Reuben L. Rockwell, engineering department, Illinois Steel Company; First Lieuts. John F. Weiss; William S. Mussenden, field engineer of construction of steel plant for Mark Mfg. Co., South Chicago; Second Lieuts. C. C. Manchester, R. C. Montgomery, assistant purchasing agent, Philadelphia & Reading.

ENGLISH YACHTS BECOME FREIGHT CARRIERS.—Second-hand steam yachts are being turned into cargo carrying boats in England and they are finding ready purchasers at good prices. The royal yacht of Siam, the "Maha Chakrkri," has been sold for conversion into a trader. The steam yacht Dotterell, which sold four months ago for £3,800 ($18,470) has been resold for £10,000 ($48,600) and has been altered into a cargo carrier.

THE PRESENT IMPORTANCE OF THE SCRAP HEAP.—In present circumstances the scrap heap in a locomotive shop assumes an importance which has never been accorded to it hitherto. Owing to the unusual demand for iron and steel products of all kinds, much difficulty is being experienced, and this condition of things must necessarily continue for some time. There is a natural shortage of material in locomotive and railway car shops as elsewhere, and this is not confined to new work alone, but extends to the repair department likewise. Wherever material can be reclaimed from the scrap heap its use may be of considerable advantage in assuring a continuous and adequate supply at all events of certain classes of material. The ever-increasing cost of metal and other requirements places upon those concerned the obligation of utilizing to the utmost all available supplies, and if recourse to the scrap heap makes it possible to complete work which otherwise would have to stand over for a considerable period, that plan would have every justification. It is necessary in reclaiming material previously scrapped to exercise considerable care in selection, and at best only a percentage is fit for re-employment in the shops. No matter how extensively reclaimed material may be used there are always large quantities which cannot be employed for building or repairing work in locomotive shops, and this, in the ordinary course, must be sold; but it may, however, serve a highly useful purpose when diverted to other channels.—*Railway Gazette, London.*

General News Department

The machine shop and blacksmith shop of the Grand Trunk at Brockville, Ont., were destroyed by fire on November 24.

The fourteenth annual convention of the National Rivers and Harbors Congress, which was scheduled to meet in Washington, December 5, 6 and 7, has been postponed until further notice.

Subscriptions to the second Liberty Loan by officers and employees of the Southern Pacific (Pacific system) and affiliated electric lines amounted to $1,445,950, as compared with $1,463,800 for the first Liberty Loan.

T. C. Powell, of Cincinnati, Ohio, vice-president of the Southern Railway, has been appointed by Judge Lovett as a member of the Priorities Committee of the War Industries Board of the Council of National Defense.

An agreement recently reached between the Illinois Central and its telegraphers provides for a readjustment of working hours and an increase in pay of $9.75 a month. The settlement was effected through the efforts of G. W. Hanger of the Federal Board of Mediation and Conciliation.

The Texas & Pacific at the beginning of the crop season this year instructed section foremen each to plant and cultivate not less than three-quarters of an acre of ground upon the right of way. The men were allowed time to work these gardens, and they planted and harvested bountiful crops on about 400 acres of the company's land.

The highway department of the State of Pennsylvania has bought 15 snowploughs, to be used in keeping the highways open during the coming winter for heavy motor-truck traffic across the state. It is estimated that at present 200 automobiles are being sent eastward through Pennsylvania every day from the large manufacturing centers west of there.

In Toronto, Ont., this week, an exemption board, examining men drafted for the army under the Canadian conscription law, exempted, for a period of one year, Omer Lewis, a ticket seller of the Grand Trunk; indicating that this man's occupation is a war necessity. On the application of a yard foreman, 23 trainmen of the Grand Trunk were exempted, the railroad company promising to give prompt notice if any one of these 23 should leave the railroad service.

The Interborough Rapid Transit Company, New York City, operating subway and elevated railroads, is employing women in station service, giving preference to dependent women of the families of employees who are in the military or naval service. (In the ticket offices of elevated railway stations in Brooklyn women have been employed for many years.) The New York Railways Company, controlled in the interest of the Interborough, is to employ women as conductors on surface street cars.

The Association of American Railway Accounting Officers is to issue a book containing a synopsis of its recommendations and decisions affecting freight and passenger accounts, including the association's standard freight and passenger forms. The freight synopsis and the passenger synopsis will be under one cover, but separate each from the other. One copy of the Synopsis will be furnished to each member free. Additional copies may be obtained at one dollar each (if ordered soon) from E. R. Woodson, secretary, Washington, D. C.

In the County Court at Buffalo, N. Y., November 16, Paul Vogel, 29 years old, a yard clerk of the Lehigh Valley, was sentenced to imprisonment for from four years to eight years for grand larceny. He had been on duty nights and had ordered loaded cars transferred to a track of the Lackawanna road where they were robbed. The court proceedings showed that on one occasion Vogel had been responsible for the theft of a carload of aluminum valued at $26,000; and the total of the thefts involved is said to have been $50,000. Two accomplices, having given evidence for the state, were let off with light punishments.

The last span of the new bridge over the Ohio river at Metropolis, Ill., was swung clear of the falsework on November 10. With the laying of track and other finishing touches it is expected that this bridge will be placed in operation about the first of January. This great structure, which is notable as containing the longest simple span (720 ft.) in the world, is being built jointly by the Chicago, Burlington & Quincy and the Nashville, Chattanooga & St. Louis. The completion of this bridge opens a new all-rail route for traffic from the Northwest to the Southeast.

Representative T. W. Sims, of Tennessee, who is a member of the Newlands Committee, and who is expected to be the next chairman of the House Committee on Interstate and Foreign Commerce, in a newspaper statement, expresses doubt as to whether it will be advisable at the coming session of Congress to attempt any permanent railway legislation of importance because of the abnormal conditions created by the war. He suggested, however, that it might be wise to pass legislation by which the Government would guarantee loans to the railroads at 3½ to 4 per cent for short terms.

Striking clerks of the Atlantic Coast Line and the Southern Railway at Norfolk, Va., decided, on November 25, to return to work; and this action appears to be the sequel to an order from J. J. Forrester, president of a clerks' union which appears to have a considerable membership on all of the principal roads of Virginia, North Carolina and South Carolina. Fragmentary newspaper reports of strikes of clerks on the roads in that region have appeared for the last three weeks. The last reports indicate that on the Chesapeake & Ohio, the Norfolk Southern and the Virginian roads the striking clerks are still out.

The New York State Safety Congress is to be held in Syracuse on December 3, 4, 5 and 6 under the auspices of the New York State Industrial Commission. War problems as related to industry in general and New York State in particular will be chief features of the program. There will be addresses on the first day by Charles B. Barnes, Dr. Royal Meeker, Carleton A. Chase and James P. Holland. On Monday evening there will be given a motion picture showing the salutary effect upon industrial safety by educating the alien population. Tuesday there will be addresses by R. M. Little, James A. Smith, Arthur E. Holder and Miss Mary Dreier.

The United States Civil Service Commission announces examinations for inspector of waybills, for both men and women, to fill vacancies in the office of the chief of ordnance, war department, at salaries ranging from $1,200 to $1,500 a year. The duties of appointees will consist of the inspection of waybills, card manifests and railroad terminal records. Competitors will not be required to report for examination at any place, but will be rated: Education and preliminary experience, 30; experience in the class of work specified, 70. Until further notice and on account of the urgent needs of the service, applications will be received at any time, and papers will be rated promptly.

Food Administration and Railways Co-operate at Chicago

A far-reaching plan designed by the railroads and the Food Administration to conserve cars and foodstuffs went into effect in Chicago on November 26. Hereafter every railroad entering Chicago will make a daily report to the food administration of every car of vegetables and other perishable foodstuffs which has been delayed three days or over, awaiting unloading or reconsignment or other disposition. This report will show the car initial and number, point of shipment, date shipped, name of shipper, contents, date of arrival, yard or track where held, name of consignee, destination for delivery and why car is held.

In all cases reported by the railroads of undue detention of cars so loaded the Food Administration and other government agencies will first definitely fix the responsibility for the detention

and then take such steps as may be necessary to remedy conditions and prevent their recurrence by the offenders.

One of the chief results which it is believed the new plan will accomplish is the prevention of similar losses at shipping points because of the undue detention elsewhere of loaded cars of perishables. Another important object is the systematic salvaging of all food fit for human use, from shipments which have become damaged in transit by causes beyond the control of anybody, such as the unseasonable freezing weather last month which damaged potatoes in transit in certain sections.

The railroads centering in Chicago will daily place at certain freight yards cars containing damaged foodstuffs which have been refused by the consignees. Under the inspection of the railroads, the Food Administration and the city health department, this damaged food will be carefully sorted by agents of the Salvation Army, the Volunteers of America and the accredited charitable organizations of the city. All the food that is fit for human consumption will thus be saved and go to those in greatest need of it. All that is worthless for food will be hauled away daily by the railroads and dumped where it will do no harm.

A Two-Thousand Mile Flight

A British aeroplane has made a successful attack in the vicinity of Constantinople after flying from England to a British base in the Mediterranean in a series of eight flights. The stopping places included Lyons and Rome, and the total distance covered was nearly 2,000 miles. The machine was actually in the air 31 hours. During some parts of the flight strong winds and heavy rain storms were experienced, and there was one stretch of 200 miles over a mountainous country where it would be impossible for any machine to land.

Railway Regiments' Tobacco Fund

This week there have been received additional subscriptions from 18 supply companies towards the Railway Regiments' tobacco fund. This brings the list up to date at Monday noon, November 26:

Adams & Westlake Company, Chicago	$10 a month
American Vulcanized Fibre Company, Boston, Mass.	10 a month
Anchor Packing Company, Philadelphia, Pa.	10 a month
Burden Sales Company, New York (to cover 6 months)	60
Butler Drawbar Attachment Company, Cleveland, O. (contribution)	50
Chicago Malleable Castings Company, Chicago	10 a month
Chicago Railway Equipment Company, Chicago (contribution)	100
Chicago Railway Signal & Supply Company, Chicago (to cover 3 months)	30
Edison Storage Battery Company	10 a month
Homestead Valve Manufacturing Company, Pittsburgh, Pa.	10 a month
W. H. Miner, Chicago	10 a month
Mount Vernon Car Manufacturing Company, Mt. Vernon, Ill.	10 a month
National Malleable Castings Company, Cleveland, O.	10 a month
Ramapo Iron Works, Hillburn, N. Y.	10 a month
T. H. Symington Company, Chicago	10 a month
Union Switch & Signal Company, Swissvale, Pa.	10 a month
Watson-Stillman Company, Aldene, N. J.	10 a month
H. H. Westinghouse, New York	10 a month

Railway Revenues and Expenses for September

The net operating income of the railways of the United States for September, 1917, was less than September, 1916, by $53 per mile, or 17.8 per cent, according to the monthly bulletin of the Bureau of Railway Economics. Total operating revenues, $357,731,325, exceeded those for September, 1916, by $32,420,037. Operating expenses, $243,610,187, were greater by $40,134,208. Net operating revenue, $114,121,138, decreased $7,714,171. Taxes, $25,088,258, increased by $11,318,287. Net operating income was $88,985,043, which is a decrease of $19,015,968.

If spread over the mileage represented, operating revenues averaged $1,547 per mile, an increase over September, 1916, of 9.7 per cent; operating expenses per mile, $1,053, were greater by 19.5 per cent; net operating revenue per mile, $494, shows a decrease of 6.5 per cent; while net operating income per mile, $385, decreased 17.8 per cent. Taxes per mile rose 81.8 per cent.

This summary covers 231,228 miles of operated line, or about 90 per cent of the steam railway mileage of the United States.

For the Eastern railways, operating revenues per mile were greater than those for September, 1916, by 11.2 per cent; operating expenses rose 21.0 per cent; net operating revenue decreased 7.6 per cent; taxes increased 39.0 per cent. Operating income per mile decreased 13.5 per cent.

For the railways of the Southern district, operating revenues per mile exceeded those for September, 1916, by 17.3 per cent; operating expenses rose 21.8 per cent; net operating revenue in-

REVENUES AND EXPENSES OF STEAM ROADS—SEPTEMBER, 1917

Compiled from monthly returns of the railways to the Interstate Commerce Commission and covering roads of Class I, i. e., roads with annual operating revenues above $1,000,000.

Account	United States				Eastern District				Southern District				Western District			
	Amount, 1917	Per mile of line 1917	1916	Increase over 1916, Per cent	Amount, 1917	Per mile of line 1917	1916	Increase over 1916, Per cent	Amount, 1917	Per mile of line 1917	1916	Increase over 1916, Per cent	Amount, 1917	Per mile of line 1917	1916	Increase over 1916, Per cent
Total operating revenues	$357,731,325	$1,547	$1,410	9.7	$160,912,658	$2,726	$2,451	11.2	$51,754,410	$1,207	$1,030	17.3	$145,054,257	$1,122	$1,058	6.0
Freight	241,569,407	1,045	992	5.3	107,296,054	1,818	1,676	8.4	35,800,582	835	752	11.0	95,472,771	761	757	0.6
Passenger	82,336,761	356	288	23.4	36,416,232	617	518	19.2	12,331,919	288	202	42.7	33,588,610	260	212	22.3
Mail	4,774,512	21	23	d 8.1	1,878,301	32	31	1.8	722,142	17	17	d 1.6	2,174,168	17	10	d 13.2
Express	9,331,414	40	34	18.3	4,453,423	75	67	12.2	1,087,314	25	22	14.9	3,840,777	20	22	27.7
All other	19,669,231	85	73	16.0	10,668,748	184	159	15.9	1,812,552	42	36	16.6	6,987,921	54	47	16.7
Total operating expenses	242,610,187	1,053	382	19.5	113,177,082	1,951	1,612	21.0	35,332,325	824	677	21.8	93,100,780	720	615	17.1
Maintenance of way and structures	40,515,306	175	169	3.6	17,753,076	301	279	7.6	6,203,649	145	144	0.7	16,554,181	128	127	0.7
Maintenance of equipment	58,379,783	252	222	13.5	27,426,770	464	419	10.9	8,510,136	222	184	20.4	21,342,877	165	144	14.3
Traffic	5,279,650	23	23	2.8	2,134,159	36	34	4.4	973,627	22	22	d 0.8	2,271,864	18	17	3.0
Transportation	129,009,728	538	430	29.8	63,000,549	1,067	807	32.2	17,323,644	404	297	36.8	48,685,535	377	301	25.0
General	8,075,911	35	31	12.3	3,466,898	59	54	9.0	1,192,110	28	26	7.6	3,416,903	26	23	17.9
All other	2,349,209	10	7	47.0	1,395,630	24	19	28.6	124,159	3	3	d 15.7	829,420	6	3	129.5
Net operating revenue	114,121,128	494	528	d 6.5	45,735,576	775	639	d 7.6	16,422,085	383	353	8.6	51,963,477	402	443	d 9.4
Taxes	25,088,258	109	60	81.8	7,692,141	131	94	39.0	3,444,347	80	45	79.7	13,951,770	108	49	120.0
Uncollectible revenues	47,237	*	*	....	15,149	*	1	....	5,527	*	*	....	27,161	*	*	....
Operating income	88,983,043	385	468	d 17.8	38,028,286	544	744	d 13.5	12,972,211	303	308	d 1.7	37,984,546	294	394	d 25.5
Operating ratio—per cent—																
1917		68.10				71.57				68.27				54.18		
1916		52.55				65.78				65.74				58.08		
Average mileage represented—																
1917		231,223				59,029				42,861				129,338		
1916		230,711				59,122				42,676				128,913		

d Decrease. * Less than one dollar.

creased 8.6 per cent; taxes increased 79.7 per cent. Operating income per mile decreased 1.7 per cent.

For the Western railways, operating revenues per mile exceeded those for September, 1916, by 6.0 per cent; operating expenses rose 17.1 per cent; net operating revenue decreased 9.4 per cent; taxes increased 120.0 per cent. Operating income per mile decreased 25.5 per cent.

The nine months of the current calendar year, compared with the corresponding period of the preceding year, show changes per mile of line as follows: Operating revenues increased 11.6 per cent, operating expenses increased 18.7 per cent, net operating revenue decreased 2.0 per cent, taxes increased 29.7 per cent, while operating income decreased 6.6 per cent.

Operating income per mile decreased 15.9 per cent in the East, increased 1.4 per cent in the South, and increased 0.6 per cent in the West.

September net operating income per mile was 17.8 per cent less in 1917 than in 1916, 9.5 per cent less than in 1915, 9.2 per cent greater than in 1914, and 8.1 per cent greater than in 1913.

Valuation Arguments December 10

The Interstate Commerce Commission has announced that oral arguments will be held at Washington on December 10 in the cases involving the reports of the Bureau of Valuation on the valuation of the Atlanta, Birmingham & Atlantic, the Texas Midland and the Winston-Salem Southbound.

Association of American Railway Accounting Officers

A circular just issued by the president of the Association of American Railway Accounting Officers says in part:

It is inevitable, especially under the extraordinary conditions now prevailing, that railway accounting officers will evolve new, improved, or simplified methods, forms, etc., and if we may have the benefit of each other's ideas and experience in this connection, this would aid in solving those problems and difficulties that are confronting us all.

The association will welcome and will be glad to consider any suggestions or any ideas, methods, forms, etc., that might be helpful to others. Any communications along this line, if addressed to the president, J. A. Taylor, comptroller of the Central of New Jersey, will be placed in proper channels.

Minimum Facilities

The Railroad Commission of a prominent western state, reporting recently on a complaint that the station facilities at a certain place were inadequate, gives the following description of the station as it was found:

"X is a non-agency station 6.3 miles north of A and 2.6 miles south of G. by rail, these being the nearest open stations. The station facilities consist of a box-car shelter divided into separate compartments for passengers and freight. The compartment designed for the use of passengers has a door and three small windows. It is equipped with a coal stove and seats for five persons. The freight room has two doors, and is conveniently arranged for loading freight into wagons. The door of the waiting room is in poor repair and the walls are disfigured. A farmer living about 40 rods from the station is employed to attend the fire in the station, and for this purpose he or his fourteen-year-old son visit the station twice daily from November 1 to April 15. A single compartment earth closet is provided.

The village is located about one-half mile east and there are no houses in the immediate vicinity of the station. The village contains a number of business places and has a population of between 50 and 100; but it was estimated that approximately 500 families are naturally tributary to this station. The wagon road to G. is in fair condition and is approximately four miles in length.

"Witnesses complained that the passenger waiting room is insufficient and not properly cared for. A number of instances were cited where it was not heated at train time and was in an unsanitary condition. As many as fifteen people occasionally wait for a single train. The trains are often late, especially in severe weather. The freight room doors are never locked and the merchandise is pilfered if it is not immediately removed by the consignee. A number of such occurrences were described. The team-way leading to the rear door of the freight room was said to be too narrow for convenience. A conductor's count of passengers on and off trains from April 5 to May 4, 1917, shows an average of 4 passengers a day boarding trains and 5 passengers leaving trains at this point. The greatest number boarding any single train was 6. The total freight receipts during the calendar year 1916 were $2,144, of which $1,250 were for freight received and $894 for freight forwarded."

The commission, in its decision, denied the need of a new station or the employment of a regular agent, but ordered certain improvements, including the employment of a competent caretaker—whether or not the farmer and his fourteen-year-old son would be acceptable does not appear—and the provision of two toilets.

Transportation and Car Accounting Officers

J. W. Nowers, president of the Association of Transportation and Car Accounting Officers, announces that, on account of the present international situation, the executive committee has postponed indefinitely the Winter meeting of the Association. A Year Book is being prepared, which will be issued December 31, containing a resume of the work accomplished by the committees in response to requests of the Commission on Car Service of the Special Committee on National Defense. This will be prepared in form similar to the regular proceedings.

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, dates of next or regular meetings and places of meeting of those associations which will meet during the next three months. The full list of meetings and conventions is published only in the first issue of the Railway Age Gazette for each month.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, Supt. Timber Preservation, B. & O., Mt. Royal Sta., Baltimore, Md. Next convention, January 22-24, 1918, Hotel Sherman, Chicago.

CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawlor Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, Morrison Hotel, Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual dinner, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.

CINCINNATI RAILWAY CLUB.—H. Boutet, Chief Interchange Inspector, Cin'ti Rys., 101 Carew Bldg., Cincinnati. Regular meetings, 2d Tuesday, February, May, September and November, Hotel Sinton, Cincinnati.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, 568 Union Arcade Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh, Pa.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month. Room 1856, Transportation Bldg., Chicago.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meeting, 2d Tuesday in month, except June, July, August and September, Boston.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.

NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—Geo. A. J. Hochgrebe, 623 Brisbane Bldg., Buffalo, N. Y. Meetings, 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.

PACIFIC RAILWAY CLUB.—W. S. Wollner, Assistant to Chief Engineer, Northwestern Pacific R. R., San Francisco, Cal.

PEORIA ASSOCIATION OF RAILROAD OFFICERS.—F. C. Stewart, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Pittsburgh Commercial Club Rooms, Colonial Annex Hotel, Pittsburgh.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grand Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 a. m., Piedmont Hotel, Atlanta.

TRAFFIC CLUB OF CHICAGO.—C. B. Singer, La Salle Hotel, Chicago.

TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 291 Broadway, New York. Regular meetings, last Tuesday in month, except June, July and August, Waldorf-Astoria Hotel, New York.

WESTERN CANADA RAILWAY CLUB.—L. Kon, Immigration Agent, Grand Trunk Pacific, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Monday in month, except June, July and August, Hotel Sherman, Chicago.

WESTERN SOCIETY OF ENGINEERS.—Edgar S. Nethercut, Secretary, 1735 Monadnock Block, Chicago, Ill. Regular meeting, first Monday in month, except January, July and August. Extra meetings generally on other Monday evening except in July and August.

Traffic News

R. S. Lovett, director of priority in transportation, has issued Priority Order No. 4 providing for priority in car supply and transportation for cottonseed cake and cottonseed meal to points in Texas and New Mexico over all other traffic, with five exceptions.

The interurban railway companies of Texas have advanced their freight and express rates; and the State railroad commission has issued an order assuming jurisdiction over all these roads. The commission proposes to make a thorough investigation and has ordered the interurban companies to file all their passenger, freight and express tariffs.

The Ann Arbor announces that car ferry service from Frankfort, Mich., to Menominee, Mich., and Marinette, Wis., will be suspended for the season on January 1. While the route is closed freight for Menominee and Marinette will be carried via Manitowoc, Wis., and the Chicago & North Western or via Kewaunee, Wis., and the Kewaunee, Green Bay & Western and the Chicago, Milwaukee & St. Paul.

Representatives of electric lines in Illinois and Indiana met in Chicago on November 22 for the purpose of organizing to assist the steam roads in handling freight. The meeting resulted in the appointment of a committee to establish through routes and to work out rates to achieve this end. The committee consists of H. G. Faithorn, vice-president of the Chicago Lake Shore & South Bend; F. W. Shappert, traffic and industrial agent of the Chicago, North Shore & Milwaukee; Richard Breckenridge, general freight and passenger agent of the Aurora, Elgin & Chicago; J. R. Blackhall, general manager of the Chicago & Joliet, and F. E. Fisher, general superintendent of the Chicago, Ottawa & Peoria. Further meetings will be held and it is planned to organize all the electric lines in Wisconsin, Illinois, Indiana, Ohio and Michigan for freight traffic purposes. This step is not being taken with the idea of competing with the steam roads, but at the suggestion of the latter in order to assist in handling the unprecedented freight business now flooding the railroads of the country.

Hearing on Proposed Increase in Express Rates

The Interstate Commerce Commission has announced that it will take up the application of the 14 express companies for a general increase of 10 per cent in express rates at a hearing at Washington, December 7. On the same day as its announcement the Commission had given out its usual monthly bulletin of express earnings and expenses which showed for seven months of 1917 an increase in operating revenues of the principal express companies from $54,400,330 to $64,520,781, while the operating income, as the result of increased expenses and taxes, had fallen from $5,161,428 to $1,192,340.

Fertilizer Association Works for Heavier Loading

The soil improvement committee of the National Fertilizer Association, Chicago, Ill., has issued a pamphlet, entitled "Fertilizers in War Time," explaining how war conditions have increased the difficulty in securing fertilizers and how the commandeering of coastwise vessels by the government forced fertilizers to move almost exclusively over the already overburdened railroads. Special emphasis is placed on the importance of ordering spring fertilizers early and in full carloads.

The pamphlet will be given nation-wide distribution in connection with a campaign to be conducted by the fertilizer industry through the winter and spring months. The association's campaign, in advance of the spring and fall shipping seasons of 1917, is credited with having doubled the efficiency of the cars used for fertilizers and stopping a long-standing trade custom in many sections, i. e., minimum carloading. The work of the association will be supported by liberal advertisements in the farm papers and agricultural journals during December, January, February and March. In addition, the manufacturers themselves are bringing special pressure to bear on all dealers and buyers of fertilizers to order their supplies early. A part of the pamphlet distributed by the association follows:

"The railway transportation situation remains as acute as at any time during the past year. Most of the phosphate rock from Florida to be used in the north must move through the Potomac gateway, which is now so congested as to make shipments most uncertain and erratic. Two million tons of phosphate rock must be moved by one means or another, if the normal demands are to be met. It is only by ordering *now* that the farmer can be assured of deliveries when he wants the goods.

"Order *now*, and order *full* carloads."

Million and a Half Soldiers Moved by Railroads

Figures compiled by the Railroads' War Board indicate that the railroads of this country have safely transported approximately 1,500,000 soldiers to training camps and embarkation points since August 1. One-third of these men have made journeys necessitating overnight travel and have been moved in tourist or standard sleepers.

On one of the long hauls 8,000 men were moved from a training camp on the western coast to a point on the eastern coast—a distance of 3,700 miles—in a little less than a week. The men traveled in 16 sections, each section comprising 12 tourist cars and 2 baggage cars.

In order to centralize the furnishing of sleeping cars and to utilize these cars to the best advantage, the Pullman Company changed the supervision of the supply and movement of these cars from the headquarters of the company at Chicago to Washington, where C. W. Henry, assistant to the superintendent of car service, was stationed. Mr. Henry, in his headquarters at the offices of the Railroads' War Board, has been in daily touch with the office of the quartermaster general, and on receipt of requests from military authorities for sleeping-car equipment has seen that the cars were rushed at once to the points needed.

As a result of this co-operation between the government, the railroads, and the Pullman Company, 500,000 soldiers have been spared the discomforts of making long trips in day coaches. To assure the safety of the men in transit, the railroads have adopted an average speed of 25 miles an hour for all troop trains except when freight cars are included in the trains. The speed is then reduced to 20 miles an hour.

Federal and State Commissioners at Boston

George W. Anderson, Interstate Commerce Commissioner, began in Boston last week a hearing on the applications of the principal New England roads for authority to make increases in rates; and with Mr. Anderson sat members or representatives of the Public Service Commissions of all of the New England states and of New York (second district). The railroads have presented petitions both to the Federal and to the State Commissions. Henry B. Endicott, of the Massachusetts Council of Defense, who has acted as arbitrator in matters of railroad employees' wages, appeared and spoke in favor of the proposed increase of 15 per cent in freight rates. R. O. Lamb, president of the John Hancock Life Insurance Company, speaking for investors, recommended the increase. His company has bought no railroad securities for more than a year. The president of the Boston Chamber of Commerce said that the Chamber was in favor of the increase. Professor W. J. Cunningham, of Harvard University, gave statistics showing the great decreases in net earnings of the railroads. Howard Elliott, of the New Haven road, and a member of the War Board, gave general information about increases in cost of operation and in taxes.

Frederick H. Prince, a railroad capitalist of long experience, presented an argument in favor of increasing the prices for carrying small shipments of freight. He reported an investigation which had been made on the Pere Marquette which showed that local freight in small lots was constantly carried at a loss. The most profitable local freight train on the Pere Marquette cost, to run, an average of $81, daily, more than its earnings. The losses of that road on that class of freight would amount to approximately fifty times this sum, that being the number of regular local freight trains. This would amount to $1,500,000 annually. Mr. Prince said that of the freight traffic of the Boston & Maine, 37 per cent was of this unprofitable character. He would have all the railroads make a special charge for loading and unloading freight, with a minimum charge per package.

Commission and Court News

INTERSTATE COMMERCE COMMISSION

The Interstate Commerce Commission on November 23 issued an order discontinuing the investigation ordered some time ago in the matter of embargoes.

In the case of Pollak Steel Company of Cincinnati versus Baltimore & Ohio et al., Attorney-Examiner Charles F. Gerry has recommended that the commission require the railroads to remove a discrimination on iron and steel articles from Cincinnati and Chicago to Atlantic ports. He finds an undue preference for Pittsburgh, Cleveland and other points. Rates from Pittsburgh are about 57.5 per cent of the Chicago-New York scale, while a strict adherence to mileage would make them 60 per cent. Cincinnati's rates are strictly on the percentage basis, 87 per cent of the Chicago rates.

Minor Tariff Changes Authorized by Blanket Order

Division 2 of the Interstate Commerce Commission, consisting of Commissioners Clark, Daniels and Woolley, has taken action to enable the railroads to make changes in tariff publications which are in the nature of notices of changes in lists of stations, etc., and in physical facilities for the information of shippers and other carriers, rather than changes in rates, without the necessity of securing the approval of the commission under the fifteenth section of the act, as is required in the case of tariffs containing an increased rate. Fifteenth Section Order No. 125 was issued on November 20, which says:

"Changes in facilities for the physical handling of freight or express matter at stations or express offices throughout the country, such as the addition of or abandonment thereof on old lines, the installation or removal of facilities for handling c. l. or l. c. l. freight, the opening and closing of 'Summer' stations, instructions to agents concerning the waybilling of shipments, and changes in the list of restricted and prohibited commodities published by water and rail carriers, are of almost daily occurrence.

The shipping public and the carriers should be informed of such physical changes and restrictions as promptly as possible to the end that both shippers and carriers may be spared the inconvenience or actual loss which may be caused by delay to freight or express matter resulting from shipments being billed and forwarded upon improper and inaccurate information respecting facilities at destination points and the detention of shipment or cars at interchange points or at ports awaiting amended instructions from shipper or agent at point of origin."

Therefore, the carriers were authorized to make changes in their tariffs, provided a notation referring to the order is placed on the title page, in such provisions as the following:

1. Additions of stations, landings or express offices on old lines.
2. Cancellation or withdrawal of stations, landings or express offices on old or abandoned lines.
3. Withdrawal or elimination of facilities for handling carload freight or express matter.
4. Withdrawal or elimination of facilities for handling l.c.l. freight or express matter.
5. Withdrawal or elimination of facilities for handling live stock.
6. Withdrawal or elimination of all facilities for handling freight or express matter.
7. Opening and closing of stations, landings or express offices at which business is transacted only during certain seasons of the year.
8. Provisions restricting the handling of inbound or outbound freight or express matter.
9. Provisions restricting the delivery of freight or express matter on private sidings.
10. Provisions restricting the handling of traffic interchanged with connections.
11. Designation of stations as junction points, passenger stations, passing tracks, or towers, at which no freight or express matter will be handled.
12. Limitations upon the quantity, weight or dimensions of shipments that can be handled at a specified station, landing or express office.
13. Limitations upon the handling of specified commodities at a station, landing or express office.
14. Waybilling instructions.
15. Additions to and eliminations from water carriers' lists of restricted and prohibited commodities shown in tariffs of the water carriers and joint tariffs of rail and water carriers.

Free Time at Ports Reduced

The Interstate Commerce Commission on Monday issued its decisions in the export freight free time and New York Harbor storage and free time cases. The commission finds the reduction proposed by the railroads from 5 days to 2 days in the free time allowed for holding at terminals at the Port of New York, domestic freight consigned to New York lighterage points, justified. Proposed increases in storage charges applicable on both export and domestic shipments were also found to be reasonable. In the export freight case the commission finds that the roads have failed to justify the proposed reduction from 15 to 5 days in the free time allowed on export traffic at the North Atlantic ports and from 10 to 5 days at the Gulf ports. The schedules under suspension, therefore, are required to be cancelled without prejudice to the filing of new schedules providing for not less than 10 days free time at the North Atlantic ports and not less than 7 days at the Gulf ports, which periods are found to be reasonable under existing conditions. The proposed reduction from 10 to 5 days in the free time applicable to bunker coal at the ports of New Orleans, Mobile and Pensacola are found to have been justified.

The report says that the only objectors to a reduction of the free storage time at New York were the flour dealers; and it adds:

"The New York flour dealers may not properly demand a total free time of seven days on their shipments when dealers at other ports have but two days; nor is it an adequate answer to this statement to say that the conditions at the port of New York are unusual. However unusual they may be, it would clearly be unjust to the carriers to rule that it is incumbent upon them to hold flour on their valuable piers for five days without charge, solely because the flour dealers find it convenient to use the carriers' facilities for storage purposes. The extent to which the flour merchants would use the terminal facilities for storage, if permitted to do so, is indicated by their contention that in addition to a reasonable period of free time they should be allowed to store domestic flour on the piers for thirty days and export flour for sixty days, at reasonable rates, as distinguished from penalty charges. There is merit in the railroads' contention that some remedy must be found for a condition that entails the holding on piers of 36.8 per cent of total flour shipments on hand (on piers) on typical days in October, 1916, for longer than thirty days."

STATE COMMISSIONS

The New York Public Service Commission, First District, has ordered the reduction of the rates chargeable by the Westcott Express Company, New York City, for taxicab service from railroad terminals to hotels, steamship piers, etc., and vice versa, to the level of the rates charged for taxicab service under city licenses. The Westcott Express Company has accepted the order of the commission and put the reduced rates into effect.

The Railroad Commissioners of Louisiana, on November 22, imposed a fine of $5,000 on the Texas & Pacific and the receivers in charge of the road, for an "arbitrary, wilful, deliberate and flagrant" violation of the rule of the commission which forbids the discontinuance of a passenger train without the consent of the commission. It was further ordered that the fine shall be increased by $5,000 for every day that the violation of the rule continues. It appears that the receivers had taken off nine branch line passenger trains in order to conserve the coal supply, and to insure the regular movement of freight traffic, especially sugar. On the following day, on application of the receivers, the Federal Court issued a temporary injunction restraining the commissioners from interfering with the operation of the road.

COURT NEWS

Weeds on Right of Way—Safe Place to Work

A section hand, while placing a hand car on the rails had his limbs pricked with burs and thistles, causing blood poisoning, for which he sued the company, alleging that it had failed to furnish a reasonably safe place to work. The Iowa Supreme Court holds that the presence of noxious weeds on a right of way is not a breach of the railroad's duty to furnish a safe place

to work to section hands whose duties involve the care and maintenance of the right of way, though an Iowa statute requires the railroads to destroy such weeds or pay the expense of their destruction by the public authorities.—McCutcheon v. Chicago, M. & St. P. (Iowa), 164 N. W., 774. Decided October 27, 1917.

Liability for Injury to Pullman Employees

The Federal District Court for the Southern District of Florida holds that the validity of a contract made in Florida by a Pullman company employee, exempting any railroad company over whose line he might run from liability on account of any personal injury to him, when brought in question in an action in a Federal Court in Florida, is to be determined by the law of that state, although the injury sued for happened in another state. The Florida statute, providing that a railroad company shall be liable for any damage done to persons by the running of its trains, or by its employees, unless absence of negligence is shown, does not declare a public policy of the state, which renders void such a contract provision, and in the absence of statute, or a decision of the Supreme Court of the state establishing such a public policy, such a contract is valid.—Eubanks v. Southern, 244 Fed., 891. Decided August 21, 1917.

Hours of Service Decisions—Diligence After Unforeseen Delay—Switch Tenders Receiving Telephone Orders

In an action for violating the Hours of Service Act by keeping train employees on duty for more than 16 hours it appeared that the crew of five men in charge of a freight train running from Blue Island to Chicago and return, a distance of 63 miles, was in continuous service for a period varying from 17 hours 5 minutes to 17 hours 35 minutes. In justification the railroad showed that, because of a derailment of a car in a train ahead, there was a delay of 2 hours and 20 minutes. The railroad contended, first, that delay of such origin comes within the exception of section 3 of the act, and the maximum period of 16 hours was thereby automatically extended 2 hours and 20 minutes. This contention the Circuit Court of Appeals, Seventh Circuit, rejected on the authority of prior decisions. It held that the railroad was required to show, in addition to the cause of delay, that it exercised a high degree of diligence to overcome the effect of the delay and relieve its employees from continuous service over 16 hours. "It was admitted on the trial that no effort was made by the train despatcher or any other representative of the railroad to relieve the crew after knowing of the accident and resulting delay. The train despatcher labored under the impression that the 16-hour limit was extended for a period of 2 hours and 20 minutes, due to excusable delay, and that no violation of the law would occur until the crew had been in continuous service for 18 hours and 20 minutes, and such misapprehension of the law explains, at least in part, the failure of the carrier to take any steps to relieve the crew." It was held that this evidence supported the finding of the trial judge that the railroad had violated the statute.—Indiana Harbor Belt Ry. Co. v. United States, 244 Fed., 943. Decided July 24, 1917.

The Circuit Court of Appeals, Seventh Circuit, holds that switch tenders, who regularly conduct the movements of the trains in and through a yard, receiving the yardmaster's telephone orders in their shanties, and executing them by transmitting them verbally or by signal to the engine or train men, and by manipulating switches, are within the proviso of Hours of Service Act, Section 2, limiting to nine hours the service of an employee who by use of the telephone receives orders pertaining to or affecting train movements.—Chicago & Alton v. United States, 244 Fed., 945. Decided July 12, 1917.

UNITED STATES SUPREME COURT

The case of the appeal of the Reading Company et al, from the decision of the lower court in the government's suit against them under the Sherman anti-trust law was reargued in the United States Supreme Court on November 20 and 21. Arguments were made by G. C. Todd, assistant to the attorney general, for the United States; by Jackson E. Reynolds for the Reading Company and by R. W. DeForrest for the Central of New Jersey.

Equipment and Supplies

LOCOMOTIVES

THE ST. PAUL UNION DEPOT COMPANY has ordered one six-wheel switching locomotive from the Lima Locomotive Works.

THE ILLINOIS CENTRAL has ordered 50 Mikado locomotives from the Lima Locomotive Works, Inc., and 25 switching locomotives from the American Locomotive Company.

FREIGHT CARS

THE UNITED STATES WAR DEPARTMENT, Equipment Division, is inquiring for prices on 78 50-ton flat cars.

THE ZIMMERMAN ALDERSON CARR COMMERCIAL COMPANY is inquiring for prices on 25 8,000-gal. capacity tank cars.

THE AMERICAN INTERNATIONAL STEEL CORPORATION, New York, has issued inquiries for 300 4,000-gal. tank cars and 80 mine cars for export to industrial interests.

THE UNITED STATES NAVY has ordered 4 50-ton box cars from the American Car & Foundry Company for the Great Lakes Naval Training Station and has issued an inquiry for 10 40-ton box cars for the Bureau of Docks and 16 40-ton gondola cars.

THE UNION PACIFIC has placed orders for 3,350 freight cars as follows: 1,000 stock cars, American Car & Foundry Company; 1,000 hopper bottom coal cars; 50 caboose cars, Mount Vernon Car Manufacturing Company, and 500 flat and 1,000 drop bottom gondola cars, Bettendorf Company.

PENNSYLVANIA HOLDS FAST TRAIN FOR SICK WATCHMAN.—The Pennsylvania Railroad company showed the human side of the big corporation one morning recently when it held up one of its through passenger trains running as an extra with first class privileges for half an hour to get a doctor on board who would carry relief to a lone watchman in a little box six miles west of Lewistown Junction, Pa., suffering from an acute attack of cramps. After the doctor had administered first aid to the sick watchman, both were brought to a local hospital in the caboose of a freight train.

ITALIAN RAILWAYS IN HANDS OF ENEMY.—Press despatches, dated November 9, report that the Austro-German armies are in possession of more than sixty miles of Italian railroads, controlling more than thirty miles of the line from Grado, on the Adriatic, toward Venice, and about an equal amount of the trackage of railroad in the north, with Udine as its center. Control of these facilities, together with a large part of the extensive system of canals in Northeastern Italy, supply the enemy with advantageous means of communication, of which the invaders already are making use.

THE CONSTITUTIONAL RAILWAYS OF MEXICO are gradually restoring their regular train service, says a correspondent, to divisions that have been out of commission during most of the protracted revolutionary period. It is announced that passenger and freight trains are now being operated between Torreon and Durango and upon several short branch lines that have been unused for a long time. The new railroad that connects the City of Durango with the division of the Constitutionalist Railways at a point near Zacatecas is finished and will be placed in regular operation as soon as it can be equipped with the necessary rolling stock. The railroad that runs between Saltillo and Torreon, formerly known as the Coahuila & Pacific, now a part of the Constitutionalist Railways, is again performing a regular freight and passenger service between those two cities. Bands of brigands are still operating along the line of the railroad that connects San Luis Potosi with Tampico, and occasional attacks are made upon trains between Saltillo and Catorce. The government, however, seems to be gradually gaining the upper hand over these outlaws and travel is becoming safer all the time.

Supply Trade News

Allen R. Miller, of the B. F. Goodrich Company, railroad sales department, at Akron, Ohio, has been transferred to the B. F. Goodrich Rubber Company, 1780 Broadway, New York, as eastern representative.

J. W. White has been appointed manager of the power and railway division of the Detroit office of the Westinghouse Electric & Manufacturing Company. Mr. White was formerly connected with the Pittsburgh office of the company, subsequently becoming associated with the Allis Chalmers Company, and has now returned to the Westinghouse Company, assuming the position above noted.

L. F. Hamilton, manager of the advertising and specialty department of the National Tube Company, Pittsburgh, Pa., will, on December 1, become associated with the Walworth Manufacturing Company, Boston, Mass., and will be succeeded by W. L. Schaeffer, his assistant. The Walworth Manufacturing Company recently purchased the Kewanee works and the Kewanee line of products from the National Tube Company. Mr. Hamilton will take up approximately the same duties with the company that he had with the National Tube Company, more particularly the training of specialty students, the supervision of specialty and sales promotion work, etc.

Fuel Orders for Lehigh Valley and the C. & O.

Orders intended to insure an adequate supply of coal to the Lehigh Valley and the Chesapeake & Ohio have been issued by the United States Fuel Administration. The orders will distribute equitably among the mines adjacent to the roads the burden of furnishing the roads' fuel supply. Both orders took effect on November 19. Mines now under contract to supply the railroads with coal will be required to supply their quota at their contract prices. Other mines will be required to furnish a pro rata supply, and at prices fixed by the government. The railroads will be required to file with the Fuel Administration each week a schedule of the tonnage which must be requisitioned for the next week's supply. The requisition order will be given priority over all contracts for other parties. The Lehigh Valley draws its supply from mines which are not located on its own lines. These mines are ordered to give priority to the demands of the Lehigh Valley, even over requisitions for coal to supply the railroads upon which they are located.

On Monday of this week, similar orders were issued in favor of the New York, New Haven & Hartford and the Central New England. The order directs all mines under contract with these railroads to give preference to the contract requirements over other shipments, except where coal is diverted by direct requisition of the Fuel Administration.

HYDRO-ELECTRIC STATION OF ITALIAN STATE RAILWAYS.—Permission has recently been granted to the Italian State Railways by the Ministry of Public Works for the erection of a hydro-electric station at Bardonecchia (Susa), a town in the Cottian Alps, 5 miles from the French frontier on the Modane line. The cost of this plant will be about 20,000,000 lire (approximately $4,000,000).—*Commerce Report.*

CAPTURED ZEP UP 8 MILES.—A staff correspondent of the Philadelphia Evening Ledger sent a despatch, dated October 23, from American Field Headquarters in France describing the Zeppelin L-49, brought down near Bourbonne-les-Bains. He says it is 600 feet long, with a diameter of 90 feet, has an aluminum frame, with longitudinal and horizontal ribs, covered with stout interlaced cord, over which is the outside cover of linen, painted black. The shape is that of an exaggerated fat cigar. Two silk balloons fill the interior, holding the hydrogen gas, which gives the lifting power. Slatted runways, nine inches wide, with guide rails, extend the length of the airship, giving access to sleeping quarters, an electric kitchen, and the five great steel engines. The Zeppelin's instrument for calculating altitude, says the correspondent, showed she had ascended a distance of 42,000 feet.

Railway Financial News

CANADIAN NORTHERN.—The Wall Street Journal says that the Canadian government has decreed that the most that shall be paid by arbitration for the 600,000 shares of common stock of the Canadian Northern shall be $10,000,000. The road is now in its final stage of transfer to the government of Canada, which for the past year has owned 400,000 shares of the company's stock, taken as collateral for loans. Arbitration proceedings will commence at once and must be concluded by March 1, 1918.

The par value of the 600,000 shares at present held by the Canadian Northern is $60,000,000, and Sir William Mackenzie, president of the road, says that the par value is not a penny above actual worth. However, the new government order marks down the stock at about 16 cents on the dollar. Nothing prohibits the arbitrators from placing a valuation higher than the arbitrary maximum of ten millions, but nothing more than that may be paid from the public treasury.

If the value is found to be less than $10,000,000, then the less sum will be paid. It is understood that Mackenzie, Mann & Company, Limited, own approximately five-sixths of these shares. Consequently, the maximum that can be paid to them will be something over $8,000,000. These shares are pledged to their bankers as part security for loans, which presumably constitute a claim against the property.

The duty of the arbitrators is to take evidence such as may be offered on behalf of the Dominion and of the company. Both parties will be heard in the usual way.

The agreement does not call upon the arbitrators to adopt any particular method. They may inquire what the stock could be sold for; they may ascertain the value of the assets and deduct the liabilities. They may take into consideration earning power. They are not restrained in any way, but simply required to get at the fair value in the best way possible. It is further specifically provided that if the arbitrators should see fit to take into consideration the reproduction cost of the system, then they must not include therein the increase in value, due to the war, of labor, material, equipment, or of any property whatever.

The company will be required to disclose all liabilities of every kind to the arbitrators. Should it be found later that liabilities exist that were not disclosed, or in excess of those disclosed, then a corresponding deduction will be made from any award given.

DENVER, BOULDER & WESTERN.—This company, which operates 49 miles of line between Denver, Colo., and Boulder, has notified the Colorado Public Utilities Commission that commencing with December 27, it intends to abandon operations, dismantle and sell its equipment.

ERIE.—Although this company recently received authority from the New Jersey Public Utilities Commission to issue $15,000,000 20-year 6 per cent refunding and improvement bonds, series A, it is stated authoritatively that no public financing is contemplated at this time. It is understood, however, that the company may borrow some money privately and use the new bonds as collateral to secure the loan.

LAKE ERIE & EASTERN.—The Ohio Public Utilities Commission has authorized the issuance of $7,790,000 common stock to sell at not less than par. The proceeds will be used in paying indebtedness to its controlling companies, the Pittsburgh & Lake Erie and the Mahoning Coal Railroad Company, amounting to $6,687,415 for equipment and the construction of its line; also to pay for additions and improvements estimated to cost $1,102,584.

SWISS TRANSPORTATION DIFFICULTIES.—Stage coaches may be seen again running between towns in Switzerland, according to press despatches. Owing to the ever-decreasing amount of coal arriving from Germany the Swiss Government has been forced to suppress half the number of passenger trains in Switzerland, while those trains in service will not be heated.

Railway Officers

Executive, Financial, Legal and Accounting

L. J. Masson has been appointed auditor of the San Diego & Arizona and the Tijuana & Tecate, with office at San Diego, Cal., vice H. I. Kittlesby, resigned to accept service elsewhere.

L. O. Heintz has been appointed auditor of freight and passenger accounts of the Missouri & North Arkansas and John P. Doughty has been appointed auditor of disbursements, both with headquarters at Harrison, Ark.

George J. Adams, who has been appointed assistant to vice-president in charge of accounting, of the Pennsylvania Railroad, with office at Philadelphia, Pa., as has been announced in these columns, was born on November 22, 1881, at Philadelphia. He was educated in the public schools and in Pierce's Business College of his native town. On April 1, 1897, he entered the service of the Pennsylvania Railroad as a clerk in the secretary's department. He was transferred in January, 1899, to the treasury department, where he served until August, 1900, when he returned to the secretary's department. In June, 1906, he served in the office of Samuel Rea, then vice-president, and in December, 1910, Mr. Adams was appointed chief clerk. He later was chief clerk to A. J. County, then special assistant to the president, who later became vice-president in charge of accounting. On November 1, 1917, Mr. Adams was appointed assistant to vice-president in charge of accounting of the same road, as above noted.

G. J. Adams

R. F. Watkins, whose appointment as treasurer of the Denver & Rio Grande was mentioned in these columns on November 9, was born at Davenport, Iowa, on October 13, 1870. Mr. Watkins received his education in the public schools of Davenport and the State University of Iowa at Iowa City. He entered railway service on February 26, 1894, in the office of the auditor of the Union Pacific, Denver & Gulf, afterwards the Colorado & Southern, and was chief clerk to the general auditor when he left that company on September 11, 1903, to become assistant secretary and trust officer of the International Trust Company, Denver, Colo. On January 1, 1906, he left the trust company to become assistant treasurer of the Denver & Rio Grande, and, after the death of the treasurer, J. W. Gilluly, was promoted to that position on August 19, 1913, resigning in 1915. He was again elected to the same position on November 1, 1917.

Operating

H. F. Sutherland has been appointed superintendent of the Kentucky & Indiana Terminal Railroad Company, with office at Louisville, Ky.

J. A. Shepherd has been appointed assistant superintendent of the Green River division of the Denver & Rio Grande, with office at Helper, Utah, vice T. F. Durkin, transferred.

P. J. Welsh has been appointed night trainmaster of the Kentucky & Indiana Terminal Railroad, with office at Louisville, Ky., vice F. I. Loyd, who has been assigned to other duties.

W. J. Haylow, assistant superintendent of transportation of the Louisville & Nashville at Louisville, Ky., has been appointed superintendent of transportation, vice C. B. Phelps, who has been called to Washington to serve as a member of the American Railway Association's Commission on Car Service. T. B. Turner, assistant superintendent at Mobile, Ala., has been appointed assistant superintendent of transportation.

R. M. MacMillan has been appointed acting division superintendent of telegraphs of the Grand Trunk Pacific lines in Ontario, Manitoba and Saskatchewan, with office at Winnipeg, Man., vice F. T. Caldwell, granted extended leave of absence to enter military service.

H. L. Reed, superintendent of the Chicago, Rock Island & Pacific at Herington, Kan., has been promoted to acting assistant general manager, second district, with headquarters at El Reno, Okla., succeeding G. W. Rourke, granted indefinite leave of absence on account of ill health; H. F. Reddig, division superintendent at El Reno, succeeds Mr. Reed; C. B. Pratt, terminal superintendent at Chicago. succeeds Mr. Reddig, and C. T. Ames, chief clerk to vice-president, succeeds Mr. Pratt, effective December 1.

James M. Scott, whose appointment as general superintendent, West Virginia district of the Baltimore & Ohio, with office at Wheeling, W. Va., has already been announced, was born on November 1, 1871, at Charleston, W. Va., and was educated in the high schools. He began railway work on September 10, 1890, with the Chesapeake & Ohio as telegraph operator and subsequently served on the Cincinnati, Hamilton & Dayton as operator; in November, 1895, was appointed despatcher, and subsequently served as trainmaster until November, 1904, when he was appointed superintendent. He remained in that position until May, 1910, and then went to the Kansas City Southern as trainmaster at Mena, Ark. The following January he entered the service of the Public Service Commission of Indiana in charge of the inspection department, and in September, 1912, went to the Baltimore & Ohio as supervisor of transportation. On January 1, 1913, he was appointed assistant superintendent of the Cumberland division and the following May became superintendent of the Monongah division, with headquarters at Grafton, W. Va., which position he held until his recent appointment as general superintendent, West Virginia district, of the same road, with headquarters at Wheeling, as above noted.

J. M. Scott

M. C. Selden, trainmaster of the Chesapeake & Ohio at Richmond, Va., has been appointed assistant superintendent, Newport News Terminal division, with headquarters at Newport News, Va.; P. P. Crawford, chief train despatcher at Richmond, has been appointed trainmaster of the Rivanna district, with headquarters at Richmond, vice Mr. Selden, and during the absence of C. S. Wright, trainmaster at Richmond, Mr. Crawford's jurisdiction is extended over the Peninsula district; E. W. Lacy has been appointed chief train despatcher of the Richmond division, with headquarters at Richmond, vice Mr. Crawford.

G. A. Hoag, who has been appointed superintendent of the Canadian Northern, eastern lines, with headquarters at Hornepayne, Ont., as has already been announced in these columns, was born on May 31, 1866, at Walters Falls. He began railway work on June 8, 1884, with the Grand Trunk and served as switchman until May, 1886. He subsequently served as night operator until January, 1888, and then as day operator and agent at different places until August, 1901, when he was appointed yardmaster at Belleville. He remained in that position until March, 1903, when he became agent at Trenton, and in October, 1905, resigned from the Grand Trunk service. He later served as trainmaster on the Central Ontario until 1908, and then to July, 1914, was superintendent on the same road. He subsequently became assistant

superintendent of the Canadian Northern at Trenton, Ont., which position he held at the time of his recent appointment as superintendent of the same road, as above noted.

F. E. Blaser, whose appointment as assistant general manager of the Baltimore & Ohio, with headquarters at Baltimore, Md., has already been announced in these columns, was born on December 14, 1858, at Tomah, Wis., and was educated in the common schools. He began railway work in 1871, with the Western Wisconsin Railway, now a part of the Chicago, St. Paul, Minneapolis & Omaha, and served consecutively with that road as water carrier, telegraph operator, agent, brakeman, conductor, train despatcher and trainmaster. In 1900 he was appointed superintendent of the Ohio River Railroad and remained in the same position when that road was taken over by the Baltimore & Ohio. He then served as superintendent of the Wheeling division of the Baltimore & Ohio and later was transferred as superintendent to the Cumberland division. In April, 1910, he was promoted to general superintendent at Baltimore, Md., which position he held at the time of his recent appointment as assistant general manager of the same road, as above noted.

F. E. Blaser

William B. McCaleb, who has been appointed general superintendent of water companies of the Pennsylvania Railroad, with headquarters at Philadelphia, Pa., as has already been announced in these columns, was born on May 18, 1862, at Mount Pleasant, Westmoreland county, Pa., and was educated in the public schools and at the Mount Pleasant Institute. He entered the service of the Pennsylvania Railroad in March, 1880, as chainman with an engineer corps at Connellsville,Pa. He subsequently was transferred to the assistant engineer's office on the Pittsburgh division as rodman, and later to the principal assistant engineer's office at Altoona. In April, 1883, he was appointed assistant supervisor at New Florence on the Pittsburgh division, and subsequently served in the same capacity at Harrisburg and at Greensburg. He was promoted in October, 1886, to supervisor of the Tyrone division, and a few months later was transferred to Middletown in the same capacity. In May, 1889, he was transferred to Downingtown as supervisor and the following December he was promoted to assistant engineer of the West Pennsylvania division at Allegheny City. He subsequently served in the same capacity on the Middle division at Harrisburg, and in October, 1895, was promoted to superintendent of the Bedford division. On December 10, 1896, he was made superintendent of the Sunbury and Shamokin division; in May, 1902, he was promoted to superintendent of the Middle division, at Harrisburg and upon a transfer of headquarters was made superintendent of the Philadelphia division in June, 1903, remaining at Harrisburg, and now becomes general superintendent of the Pennsylvania Railroad water companies, as above noted.

W. B. McCaleb

J. W. Deneen, whose appointment as superintendent of the Monongah division of the Baltimore & Ohio, with headquarters at Grafton, W. Va., has already been announced in these columns, was born on July 8, 1875, at Cumberland, Md., and was educated in High School. He began railroad work in July, 1890, as a messenger on the Baltimore & Ohio; the following year he became an operator on the Cumberland division. From 1902 to 1915 he served consecutively as copy operator, train despatcher, chief despatcher and trainmaster. He was then appointed assistant superintendent, which position he held until his recent appointment as superintendent of the Monongah division of the same road, as above noted.

W. N. Neff, whose appointment as general manager of the St. Louis Southwestern and vice-president and general manager of the St. Louis Southwestern of Texas, with office at Tyler, Tex., was announced in these columns on November 16, was born at Lawrence, Kan., on August 11, 1874. His railway career started with the Missouri Pacific in June, 1889, and he remained with that road until September, 1895, serving as station baggageman, telegraph operator, station agent, roadmaster's clerk and clerk to the division superintendent. From September, 1895, to April, 1899, he was employed by the Montana Central and Great Northern, on the former as telegraph operator and maintenance of way clerk and on the latter as maintenance of way clerk, chief clerk to the superintendent and chief clerk to the general superintendent. In April, 1899, he went with the St. Louis Southwestern as assistant superintendent and in March, 1900, was promoted to superintendent, in which capacity he served until May, 1911, with the exception of one year when he was chief clerk to the president. From this date until January 1, 1915, he was general superintendent of the St. Louis Southwestern and vice-president and general superintendent of the St. Louis Southwestern of Texas. From January, 1915, to November 1, 1917, he was superintendent of the Northwestern Pacific at Sausalito, Cal. His appointment, as stated above, was effective November 8, 1917.

W. N. Neff

Traffic

H. W. Warren, city ticket agent of the Chicago, Milwaukee & St. Paul at Des Moines, Iowa, has been appointed to the recently created position of district passenger agent, with the same headquarters.

P. B. Doddridge, commercial agent of the Texas & Pacific at Kansas City, Mo., has been transferred to Pittsburgh, Pa., succeeding T. B. Moss, resigned. C. R. Krause succeeds Mr. Doddridge as commercial agent at Kansas City.

Paul Wadsworth, freight traffic manager of the Delaware & Hudson at Albany, N. Y., has been appointed assistant to the general traffic manager with duties to be assigned, and his former position has been abolished; Charles E. Rolfe, general freight agent at Albany, has been appointed general agent, traffic department, in charge of freight solicitation; William G. Story has been appointed general freight agent, and Walter C. Harden has been appointed assistant general passenger agent; all with offices at Albany.

Harvey Lewis Fell, who has been appointed assistant general passenger agent of the Central of Georgia with headquarters at Savannah, Ga., as has already been announced in these columns, was born on November 15, 1872, at Talbotton, Ga., and was educated in the public and commercial schools. He began railway work in October, 1892, with the Central of Georgia and has been in the continuous service of that road ever since. He first served in the passenger department as stenographer to the general passenger agent, and subsequently held positions in the same depart-

ment as voucher clerk, ticket stock clerk, rate clerk, chief rate clerk and chief clerk. On November 1, 1917, he was appointed assistant general passenger agent of the same road, as above noted.

E. H. Hoops, general agent in the freight department of the Chicago & North Western at Chicago, has been promoted to assistant general freight agent, with the same headquarters. A. R. Gould, general agent at Cleveland, Ohio, has been promoted to general agent in the freight department at Chicago, succeeding Mr. Hoops. A. W. Bower, general agent at Indianapolis, Ind., has been transferred to Cleveland to succeed Mr. Gould. John Mellen, general agent at Omaha, Neb., has been transferred to Indianapolis to succed Mr. Bower and R. D. Miller, assistant beneral agent at Omaha, has been promoted to general agent, succeeding Mr. Mellen.

Walter S. Franklin, Jr., whose appointment as assistant general freight agent of the Pennsylvania Railroad, with headquarters at Philadelphia, Pa., has already been announced in these columns, was born on May 24, 1884, at Ashland, Baltimore county, Md. He graduated in 1906 from Harvard College with the degree of bachelor of arts, and in October of the same year entered the service of the Pennsylvania Railroad as platform clerk at Dock street freight station, Philadelphia. The following January he was made overcharge claim clerk in the general office, and in October of the same year was promoted to rate clerk. In October, 1908, he was transferred to the transportation department of the Northern Central Railway at York, Pa., as assistant to the agent. The following July he was appointed freight solicitor at Baltimore, and subsequently held the same positions in New Haven, Conn.; Toronto, Ont., and Pittsburgh, Pa. On January 1, 1914, he was appointed southern freight agent at Atlanta, Ga., with general supervision over the soliciting agencies of the Pennsylvania System in the southern states, and in December, 1915, was made division freight agent of the Philadelphia, Baltimore & Washington, at Baltimore, Md., which position he held until his recent appointment as assistant general freight agent of the Pennsylvania Railroad, lines east of Pittsburgh, as above noted.

W. S. Franklin, Jr.

Thomas Henry Gurney, who has been appointed assistant general passenger agent of the Chesapeake & Ohio, with headquarters at Cincinnati, Ohio, as has already been announced in these columns, was born on February 3, 1875, at Covington, Ky., and was educated in the high school. He began railway work in December, 1893, and served as a clerk and stenographer in the general passenger department of the Cleveland, Cincinnati, Chicago & St. Louis until August, 1895. He was then to August, 1903, consecutively stenographer and clerk, chief division clerk, and chief rate clerk in the general passenger department of the Cincinnati, Hamilton & Dayton at Cincinnati. From August, 1903, to the fall of 1904, he was chief clerk to the general passenger agent of the Chicago, Cincinnati & Louisville. In January, 1906, he was appointed general passenger agent of the same road, which later became part of the Chesapeake & Ohio, and from August, 1910, he was district passenger agent of the Chesapeake & Ohio lines until his recent appointment as assistant general passenger agent, as above noted.

Engineering and Rolling Stock

C. E. Peck, general foreman for the Southern Pacific at Roseville, Cal., has been promoted to master mechanic of the Portland division, with headquarters at Portland, Ore., succeeding George Wild, resigned.

A. C. MacKenzie, engineer maintenance of way of the Canadian Pacific, with headquarters at Montreal, Que., has been transferred in the same capacity to Winnipeg, Man., succeeding Frank Lee, transferred to Montreal in place of Mr. MacKenzie.

D. G. Cunningham has been appointed assistant superintendent motive power and car departments of the Denver & Rio Grande, with headquarters at Salt Lake, Utah; E. J. Harris having resigned, the duties of master mechanic will be also assumed by Mr. Cunningham.

William H. Fetner, acting superintendent motive power of the Central of Georgia at Savannah, Ga., has been appointed superintendent of motive power; Frederick F. Gaines, superintendent of motive power, who was granted leave of absence in September on account of continued ill health, has been assigned to other duties.

L. L. Allen, general foreman of the St. Louis, Brownsville & Mexico at Kingsville, Texas, has been appointed master mechanic of the Gulf Coast Lines, with headquarters at De Quincy, La., and J. L. Lavalle, master mechanic of the New Orleans, Texas & Mexico at De Quincy, has been appointed assistant superintendent with office at De Quincy.

Purchasing

R. L. Agner has been appointed division storekeeper of the Southern Railway, with office at Alexandria, Va., vice A. B. Lackey, resigned to enter service of United States Army.

E. J. Shields has been appointed general storekeeper of the Kansas City, Mexico & Orient, with headquarters at West Wichita, Kan., vice C. A. Keller resigned to accept service with the United States Government.

W. W. Eldridge has been appointed storekeeper of the Chicago, Burlington & Quincy at Sheridan, Wyo., succeeding M. Josselyn, assigned to other duties. I. G. Morrison, store inspector, succeeds Mr. Eldridge as storekeeper at Havelock, Neb.

Railway Officers in Military Service

F. T. Caldwell, superintendent of telegraphs of the Grand Trunk Pacific at Winnipeg, Man., has been granted an extended leave of absence to enter military service.

C. V. Link, was erroneously reported as being appointed assistant superintendent of the Chicago, Terre Haute & Southeastern at Bedford, Ind., in the *Railway Age Gazette* of October 19. Mr. Link was granted leave of absence from his position as assistant superintendent at Bedford on September 1, and is now a freight traffic expert in the ordnance department of the army with the commission of captain in the Ordnance Officers' Reserve Corps.

OBITUARY

Thomas P. Barry, formerly from 1891 to 1899 general passenger agent of the Iowa Central, died at the home of his son in St. Louis, Mo., on November 16, at the age of 75. Mr. Barry was for many years the general passenger and ticket agent of the old Marietta & Cincinnati, later acting in the same capacity on the Cincinnati, Washington & Baltimore.

Amos S. Crane, freight traffic manager of the Boston & Maine, with headquarters at Boston, Mass., died on November 22, at his home in Weston. He was born in 1848, at Washington, Berkshire county, Mass., and was educated in the public schools and at the Connecticut Literary Institute, Suffield, Conn. In 1877 he began railway work with the Erie Railroad at Chicago as contracting freight agent. Three years later he was transferred to Boston, as New England agent of the South Shore Line and Great Western Despatch which operated over the Erie. In 1883 he became general freight and passenger agent of the Boston, Hoosac Tunnel & Western, at Mechanicville, N. Y., and the following year he returned to Chicago as general freight agent of the Chicago & Atlantic. In 1890 he was appointed general freight agent of the Fitchburg Railroad, at Boston, Mass.; he was promoted in June, 1898 to general traffic manager and when that road was consolidated with the Boston & Maine in July, 1900, he was appointed export freight traffic manager of the Boston & Maine system. In 1907 he was appointed assistant freight traffic manager and since 1909 was freight traffic manager of the same road.